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THE JOURNAL

OF THE

American Medical Association

Annual Subscription, $5.00 | PUBLISHED WEEKLY | Single Copies, 20 Cents

VOLUME 82, No. 2 | **636 North Dearborn Street, CHICAGO, ILL.** | **JANUARY 12, 1924**

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Entered as Second-Class Matter, June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized on June 14, 1918. If undeliverable, return postage is guaranteed

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The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 82, NO. 2 CHICAGO, ILLINOIS JANUARY 12, 1924

THROMBOSIS AND EMBOLISM RESULTING FROM RENAL TUMORS *

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Thrombosis and obstruction of the inferior vena cava may result from infection, trauma or neoplastic extension from regional organs. Pleasants,[1] and Jacobson and Goodpasture [2] have presented excellent reviews of the subject, with complete analyses of the literature. The following case is an unusual example of a fatal embolus arising from adenocarcinoma of the kidney following nephrectomy.

REPORT OF A CASE OF THROMBOSIS AND EMBOLISM

History.—J. J. G., a man, aged 29, came to the clinic, July 20, 1923, complaining of pain in the right loin and back, of six months' duration. At the onset the pain was mild and fairly constant, but it became more severe if the patient stooped forward. Three months before examination he had had several severe attacks of colic in the area of the right kidney; the pain radiated to the genitalia. The appendix was removed without relief. One month before, he had had severe hematuria for ten days. Several times during the last few months he had raised small amounts of blood-stained sputum.

Examination.—A moderately enlarged, freely movable right kidney was found. The hemoglobin was 79 per cent., and the urine contained a few white and red blood cells. The phenolsulphonephthalein return was 55 per cent. in two hours and fifteen minutes. Roentgenograms of the chest, kidneys, ureters and bladder were negative. Through the cystoscope the bladder was seen to be normal, with clear spurts of urine coming from both ureteral orifices. There was no obstruction to either ureteral catheter, and clear urine was obtained from both kidneys; the urine from the right kidney contained a few pus cells. Phenolsulphonephthalein appeared in four minutes after intravenous injection from both kidneys; 3 per cent. was returned from the right kidney, and 10 per cent. from the left in fifteen minutes. The pyelogram of the right kidney revealed an attenuated semicircular deformity of the renal pelvis and calices.

Operation.—The right kidney was exposed through a Mayo lateral incision. It was moderately enlarged, although it still retained its normal contour. The kidney was raised into the incision without difficulty, and the pedicle found to be only moderately thickened. There was a solid nodular mass lying next to the vertebrae, which was apparently composed of enlarged glands. It was impossible to determine whether the kidney contained tumor and the vertebral masses were metastatic, or whether the condition was entirely inflammatory. The kidney was smooth and regular; a mass could not be palpated, and the organ did not have the tortuous, dilated, superficial veins usually associated with renal tumors. The pedicle was clamped and doubly tied, and the kidney removed. The adjacent mass was deep set, immovable, and not interfered with. The kidney rack, which had been elevated, was then lowered in order to facilitate the closure of the wound. The patient immediately became cyanotic and breathed with difficulty. The wound was rapidly closed and he was put to bed. The respiratory difficulty gradually increased, and he died thirty minutes after completion of the operation. The pulse remained regular and of good quality until death.

Pathologic Findings.—When opened, the kidney was found to contain a carcinoma of the grawitzian type. There were several soft, reddish brown masses, 3 cm. in diameter, in the lower pole, and a large, soft mass growing into the pelvis and renal vein (Fig. 1). The kidney contained a large amount of normal appearing, uninvolved tissue. At necropsy the mass adjacent to the vertebra was found to be the inferior vena cava, which was enormously distended with a soft, reddish tumor; the remaining stump of the renal vein was filled with the same material (Fig. 2). The growth extended up the vena cava to the heart, where a plug of tissue, 5 cm. long and 2 cm. in diameter, projected into the right auricle of the heart (Fig. 3). The upper portion of the growth was soft and necrotic. In the lung, embolic masses of the soft tumor were found plugging both the right and left pulmonary arteries; the emboli were unattached to the walls of the vessel, and were evidently of recent origin. A small mass of tissue was found plugging the right ureter. There had been no symptoms of ureteral obstruction or unilateral urinary retention, and the ureter was patent at cystoscopic examination seven days before operation. The bladder on the right side revealed a moderate inflammatory thickening, suggesting that the ureteral involvement and possible obstruction was at least of several days' duration.

Histologic Findings.—The masses in the kidney were composed almost entirely of large, clear cells, with distinct outlines, arranged in papillary and glandular masses. The cells contained a large amount of clear protoplasm, and rounded or oval, deeply staining nuclei; the nuclei were located at the base of the cells (Figs. 4, 5 and 6). The masses in the vena cava and those forming the emboli in the pulmonary arteries contained only small amounts of tumor tissue; the bulk of the thrombus was composed of partly organized blood clot.

Comment.—The sudden onset of cyanosis and respiratory difficulty, the tumorous growth in the vena cava and right auricle, and the recent obstruction of the pulmonary arteries with tumor emboli indicate the cause and manner of death in this case.

OBSTRUCTION FROM THROMBOSIS

Fifteen cases of obstruction of the inferior vena cava by thrombosis have been observed in the Mayo Clinic. The severity of this condition is obvious from the fact that fourteen of these cases came to necropsy. In sixteen of eighteen cases reported by Pleasants from the Johns Hopkins Hospital, necropsy reports were also

* From the Section on Surgery, Mayo Clinic.

1. Pleasants, J. H.: Obstruction of the Inferior Vena Cava, with a Report of Eighteen Cases, Johns Hopkins Hosp. Rep. **16**: 363-548, 1911.
2. Jacobson, V. C., and Goodpasture, E. W.: Occlusion of the Entire Inferior Vena Cava by Hypernephroma, with Thrombosis of the Hepatic Vein and Its Branches, Arch. Int. Med. **22**: 86-95 (July) 1918.

available. In one of the fifteen cases from the Mayo Clinic series, the obstruction followed a general infection, probably typhoid. The diagnosis was made clinically. There was extensive collateral circulation and edema of the lower half of the body. The patient recovered.

Fig. 1.—Carcinoma of the kidney involving the pelvis and renal vein.

Nonmalignant Thrombosis.—This condition in the renal veins sometimes extends to the vena cava. This type of obstruction, which may result from manipulation of the renal pedicle, mass suturing of the vessels with penetration of the renal vein, or from postoperative extension of an infectious process from the kidney, is generally fatal. Fatal thromboses and pulmonary embolism following operation on the kidney may also occur without involvement of the vena cava. The embolism may be composed either of a simple blood clot or of tumor tissue. This may occur immediately following operation, or several days later, and may follow nephrectomy, or merely exploration and manipulation of the kidney.

Obstruction of the inferior vena cava may follow extensive cutting operations on the pelvic organs. It is generally accompanied by infection which starts in the minor veins and spreads to the vena cava through the iliacs. It may follow operation on the prostate, on the uterus, or resection of the rectum for carcinoma. When accompanied by infection, such as an infected thrombus or regional peritonitis, the course is generally rapid and fatal. In some cases a partial obliteration of the vena cava may persist for months. Extension of the thrombus to the level of the renal veins is generally fatal.

In long-standing cases, edema of the legs and extensive collateral circulation are common. The actual occlusion of the blood vessels is not in itself necessarily fatal. Generally an extensive collateral circulation compensates for the obstruction. Griffith [3] reported a case of a man, aged 55, in whom the inferior vena cava from the renals to the hepatic vein was a fibrous cord. There had been no superficial distention of veins, and no symptoms of obstruction during life. The renal veins formed the principal collateral channels. Pleasants asserts that a very gradual occlusion of the inferior vena cava is ordinarily without effect on the heart and blood vessels, apart from those concerned in the collateral circulation. The superficial collateral circulation is rarely seen in the acute, rapidly progressing cases which follow surgical procedures.

Malignant Thrombosis.—Malignant obstruction to the inferior vena cava not uncommonly has its origin in renal tumors with extension through the renal vein. Simple extension of the tumor into the renal veins, which practically always accompanies involvement of the vena cava from renal neoplasms, greatly increases both the immediate and the late mortality statistics in cases in which nephrectomy is performed for malignancy. Foulds,[4] in a review of 200 cases of tumor of the renal parenchyma treated at the Mayo Clinic, found that the renal vein was involved in forty-five (22.5 per cent.). Nine of the forty-five patients died directly

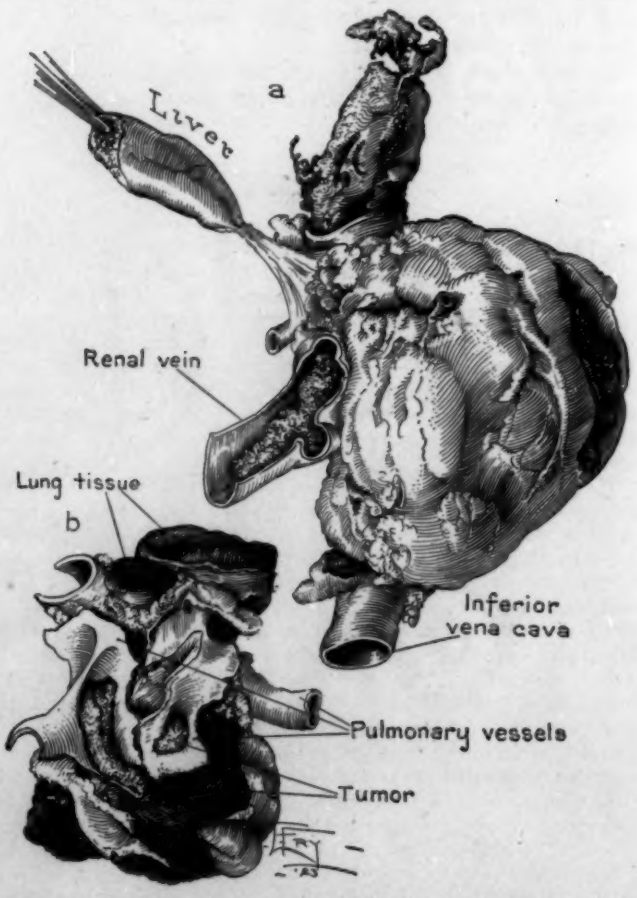

Fig. 2.—*a*, inferior vena cava distended with secondary growth from the kidney; *b*, emboli blocking pulmonary arteries.

after operation. In the remaining 155 cases in which the renal vein was not involved, there was a hospital mortality of 1.5 per cent., only two patients dying. Of the thirty-six patients with involvement of the renal vein who survived the operation, complete postoperative

3. Griffith, quoted by Pleasants (Footnote 1).
4. Foulds, G. S.: Personal communication to the authors.

data were obtainable concerning thirty-one. Twenty-two of these died in less than two years after operation. Five of the forty-five (11.1 per cent.) patients are alive from three to fourteen years after operation.

Extension to the renal vein greatly increases the difficulty of accurate hemostasis; the vein is rigid and friable, having lost its usual elasticity, and after ligation or clamping of the pedicle, the contained plug of tissue prevents accurate healing of the incised veins. In one case, nephrectomy was performed for carcinoma of the renal pelvis in a man, aged 60. The growth filled the renal vein, and when the kidney was raised, the vein was torn completely from the vena cava. The bleeding was partly controlled with gauze and clamps, but the patient died from hemorrhage shortly after the operation. In another case, left nephrectomy was performed for a large renal carcinoma in a woman, aged 56. The renal vein was completely filled with tumorous tissue,

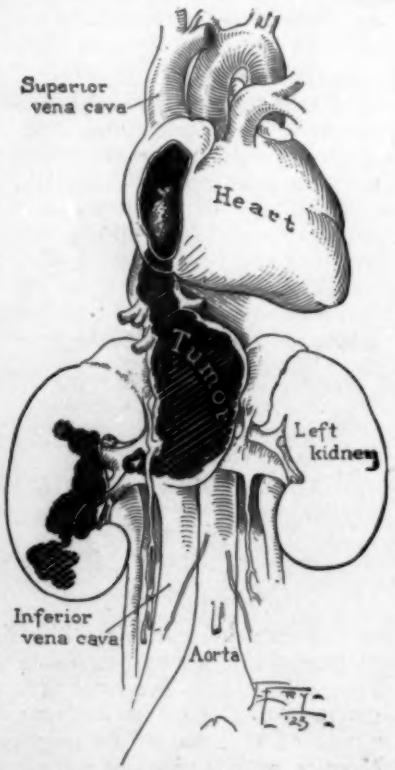

Fig. 3.—Carcinoma extending through renal vein to vena cava and into the right auricle.

which projected into the vena cava. There was considerable bleeding from numerous vessels, and it was necessary to apply clamps to the renal pedicle. Four days later these were removed; there had been no healing of the vessels, and the patient died shortly afterward from hemorrhage.

Extensive involvement of the renal vein does not always indicate a poor prognosis. In a number of nephrectomies for malignant tumor, W. J. Mayo has opened the renal vein and removed plugs of tissue which were growing toward the vena cava. In one case, a large renal tumor was removed from a man, aged 56. A portion of the tumor 4 cm. in diameter extended into the renal vein as far as the vena cava. This was removed and the vein sutured. Five years later, the patient was perfectly well.

In four of the cases of obstruction of the vena cava seen at the Mayo Clinic, the thrombus was neoplastic in origin. The obstructions were all from neoplasms involving the kidney; they reached the vena cava through the renal vein.

Growth of Thrombus.—In an occasional case, the thrombus is composed entirely of malignant tissue, but generally the neoplasm forms the nucleus for the formation of an extensive, rapidly spreading blood clot. The growth in the vena cava may vary in size from a small, unattached plug of tissue to a mass that com-

Fig. 4.—Papillary adenocarcinoma of the kidney; × 150.

pletely fills and distends the vessels, and projects into the cavities of the heart. In thirteen of forty-three cases of malignancy of the vena cava, Pleasants found that the growth reached the heart or actually invaded it. In one case the entire vena cava, both above and below the entrance of the renal veins, was invaded.

Clinical Course.—Patients, even with extensive involvement of the vena cava as noted herein, are not infrequently in very good general health; they experience but little inconvenience or discomfort until shortly

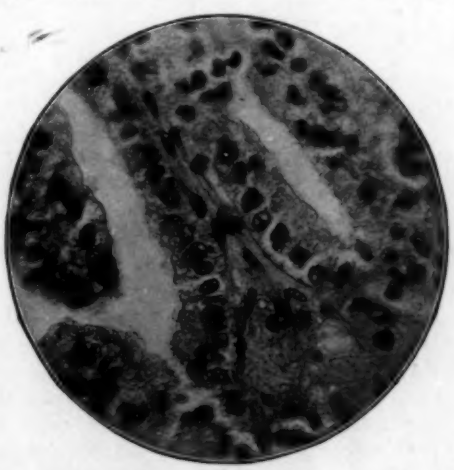

Fig. 5.—Large, clear cells with deeply staining, round nuclei; × 400.

before death. In one case, a man, aged 51, had had symptoms of trouble for only eleven weeks, when he died. His symptoms were due almost entirely to obstruction and distention of the gallbladder from extracystic pressure. At necropsy, the kidney contained a large, degenerating carcinoma, with extension through the renal vein into the vena cava, where it formed a mass 5 cm. in diameter. The growth had extended to the heart, completely filling the right

auricle. In another case, a man, aged 22, had been perfectly well until three weeks before he was examined at the clinic. Following a fall, he had had a mild pain in the region of the liver, and noticed a rapidly growing mass in the right abdomen. At operation, an extensive hemorrhagic tumor was found, which involved the right kidney, the right suprarenal, and the liver. The patient died shortly after operation, and the tumor, a carcinoma of the suprarenal type, was found to fill the

Fig. 6.—Cells arranged in papillary form; × 400.

inferior vena cava almost completely. In this case, the tumor extended toward the iliacs.

In most cases, the thrombus, which is free and unattached to the vein, is influenced by the current of the blood, extending toward the heart. When the blood stream is obstructed, this directional influence is lost. In the case just mentioned, the large, extravenous masses probably caused obstruction to the upper third of the vena cava. Lacking the force of the blood stream to direct the current of the growth toward the heart, the mass extended downward to the iliacs and localized below the level of the renal arteries.

Pathology.—Extension to the vena cava and renal vein occurs most commonly in cases of carcinoma or so-called hypernephroma. Pleasants found twenty-nine cases in which thrombosis of the vena cava developed from a renal neoplasm; twenty-one were carcinomas and eight sarcomas. Engelken [5] reported extension to the inferior vena cava from a mixed renal tumor in a child, aged 6 years. The entire vena cava from the level of the renal vein to the right auricle was filled with the tumorous tissue. Taddei [6] reports a case in which a squamous-cell tumor of the renal pelvis invaded the renal vein and inferior vena cava. The growth extended downward and completely filled the common iliacs.

Sarcomatous invasion also occurs not only directly from renal tumor, but also from retroperitoneal and perirenal tumors. The extension is generally through the renal vein, and progresses very rapidly. Death usually results from the local condition, although metastasis to the liver, lungs and regional glands occasionally occurs. In some instances, the direct growth and the metastasis become very extensive. In Jacobson and Goodpasture's case, the growth filled the vena cava from the iliacs to the heart, and extended into the right auricle and through the tricuspid valve into the right ventricle. French [7] reports a case in which the extension from the vena cava and right auricle progressed into the ventricle, causing tricuspid stenosis of the ball and socket type. Weber [8] reports a case in which a growth completely filling the inferior vena cava involved the opposite renal vein and both hepatic veins, and projected into the right auricle. Death occurred following thrombosis of the vessels of the remaining kidney. When the masses involve the hepatic veins, a fatal central necrosis of the liver may occur, as in Jacobson's case.

Mortality.—Pleasants found that of 171 patients with obstruction due to thromboses of various types, 75 per cent. died. Obstruction as the result of tumor is almost invariably fatal, although not always immediately so. In fifteen of eighty-eight cases in which there was obstruction of the vena cava from new growth, Pleasants found that death did not occur until more than three months after the appearance of the first symptom.

SUMMARY

In a case of fatal neoplastic pulmonary embolus following nephrectomy for carcinoma, the secondary growth had extended to the inferior vena cava. The patient was a young man in good general health; there was no clinical evidence of involvement of the vena cava. The primary focus in the kidney was small, and gave few indications of malignancy during clinical examination or at operation. Death occurred immediately atfer operation, and was caused by the passing of tumor emboli through the right side of the heart to the right and left pulmonary arteries.

5. Engelken, H.: Metastasirende embryonale Drüsengeschwulst der Nierengegend im Kindesalter, Beitr. z. path. Anat. u. z. allg. Path. **20**: 320-366, 1899.

6. Taddei, D.: Patologia e clinica dei tumori del rene, Folia urolog. **2**: 638-693, 1908.

7. French, quoted by Jacobson and Goodpasture (Footnote 2).

8. Weber, F. P.: Bilateral Hypernephroma, with Secondary Thrombosis of the Inferior Vena Cava and Terminal Uremia, Proc. Roy. Soc. Med. **8**, Medical Section, pp. 6-10, 1915.

FRACTURES THROUGH THE LOWER EPIPHYSIS OF THE HUMERUS OCCURRING IN CHILDREN *

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This report is concerned entirely with fractures in children, occurring through or just above the lower epiphysis of the humerus. The treatment suggested and the results mentioned have no bearing, whatever, on any other type of fracture in the neighborhood of the elbow. Mention only is made of the cases wherein treatment is entirely finished and the results known.

It is customary to give a poor, or at least a very guarded, prognosis in all fractures involving the elbow joint. The type of fracture we are now discussing falls within that category. I quite agree that, for obvious reasons, it is wise to give a guarded prognosis; but in our own minds, in dealing with the fractures under discussion, may we not have a much more hopeful outlook? I think we may, and my reasons for so thinking are based on my experience in the cases reported in this paper.

Twenty-one cases of fracture through or just above the lower humeral epiphysis are here reported. No

* Read before the Section on Orthopedic Surgery at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

* Because of lack of space, this article is abbreviated by the omission of a number of illustrations. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter may be obtained on request.

mention is made of two patients that became dissatisfied and left our care, nor is any case mentioned that is still under treatment. Our files contain complete roentgenographic reports of the twenty-one cases, and, in most of the cases, photographic records as well. Economy of space compels me to limit the number of roentgenographic and photographic illustrations. The oldest patient in the series is aged 10 years, and the youngest, 10 months.

In nineteen of the cases there was backward displacement, a few complete with overlapping. In the majority, there was not only backward displacement, but some lateral displacement as well. In three instances, the lateral displacement was also complete. In only two cases was there a forward displacement of the epiphysis. In none of the cases was there any nerve involvement or circulatory disturbance. Twenty of the fractures were reduced without open operation; one case was reduced by open operation. Of the twenty-one cases in which the end-results are known, twenty are perfect, by which I mean that there is no disability of which the patient is aware. One patient has 110 degrees of motion.

TREATMENT

A roentgenogram is first made in order to determine accurately the type of fracture, the degree of displacement and the amount of comminution. Unless the roentgenogram indicates that attempted reduction, by the closed method, is very likely to fail, we proceed immediately with the reduction. No delay is made to permit of swelling to disappear. I feel very strongly that the quickest way to get rid of the swelling is to restore normal anatomic relations. Reduction is attempted under general anesthesia and under the fluoroscope, and never any other way. Some surgeons may feel satisfied, and justly so, with their sense of touch without the aid of the fluoroscope. I have no criticism of the man whose sense of touch is so delicate; but mine is not and, therefore, I invariably use the fluoroscope.

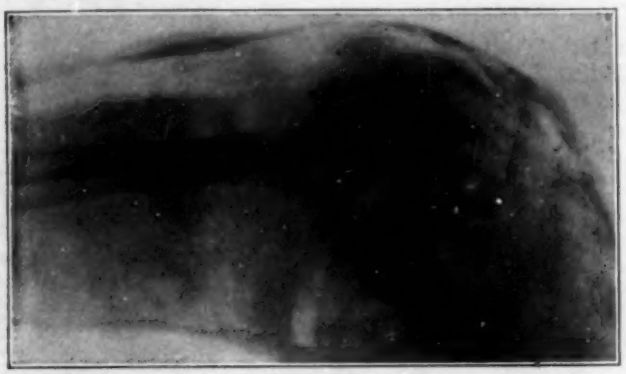

Fig. 4 (Case 2).—Posterior displacement.

In fractures of the lower epiphysis of the humerus, the lower fragment to all intents and purposes becomes an integral part of the forearm. Keeping this in mind, I make no effort to reduce these fractures by traction alone, a method that is almost sure to fail. I use the same method as in the reduction of a Colles fracture and many other fractures. With the elbow firmly grasped, the movements of the parts closely watched on the fluoroscopic screen, the existing deformity is greatly increased until the fragments may be unlocked and the edges made to slide past each other. The reverse procedure is then carried out, the lower fragment sliding forward and the elbow being flexed at the same time. It may be necessary to go through this procedure several times before a satisfactory replacement can be obtained. The same method of angulation and reversal of procedure is used to correct a lateral displacement.

Fig. 5 (Case 2).—Reduction obtained under the fluoroscope.

The arm is then put up in a molded plaster splint, although adhesive strips may work equally well. Usually the elbow is put up in acute flexion, but not always. Perhaps it would be better to say that it is put up in that position in which, under the fluoroscope, it can best be maintained. Naturally, this method is modified according to conditions that exist, and as these conditions are observed under the fluoroscope. For emphasis, we again remark that we make no effort to reduce these fractures except under full anesthesia and under the fluoroscope.

Formerly I started physiotherapy in these cases as early as the tenth day. No harm came from this procedure, but little or nothing was accomplished. I now make it a rule to start physiotherapy at the end of three weeks, unless the roentgenogram indicates that such a procedure would be unwise. The average surgeon does not have either the time or the necessary skill to carry on this physiotherapy work, and, therefore, I make use of a well trained physiotherapist. I direct the work in person, and frequent examinations are made, the frequency depending on the peculiar conditions surrounding each individual case. The length of time required for the physiotherapist to develop the

Fig. 6 (Case 2).—End-result; two weeks' physiotherapy; treatment continued by mother.

maximum amount of motion is most variable. It ranges anywhere from a few weeks to several months.

From my experience, I am led to believe that the hardest factor to overcome in the development of motion is not adhesions, but muscle spasm. Relaxation is always difficult, and not infrequently taxes all the skill of the trained physiotherapist. It cannot be overcome forcibly, but must be "coaxed" out of each individual child. A long and patient study of muscle

Fig. 16 (Case 6).—Lateral displacement.

spasm is well worth while to the surgeon who is going to treat elbow fractures successfully.

In the past, and not infrequently today, we see efforts made to restore motion in these stiff elbows, by vigorously working the elbow under full anesthesia. I mention this method merely for the opportunity of condemning it. I do not see how it can do good—and it certainly may do an untold amount of harm.

When the ordinary methods of physiotherapy fail to bring results, I resort to what I term a "split cast." This is a simple and effecture procedure, but, like most simple procedures, must be carefully and patiently handled. A circular cast is applied from the wrist to the shoulder, with the elbow in the position of greatest flexion. After the plaster is thoroughly set, the cast is cut transversely, across the front of the elbow, leaving only a narrow hinge at the back. The elbow is then extended to the limit of pain. In this position

Fig. 18 (Case 6).—End-result.

it is firmly held by means of a small splint, approximately 8 inches long and about as wide as the arm. It may be necessary to use a splint considerably less than 8 inches in length. The splint extends lengthwise of the arm, anteriorly, and is firmly bound in position by means of adhesive strips across the middle and at either end, the adhesive strips completely encircling the cast. Naturally, the middle strip—the one that maintains the elbow in position—is applied first. The two end strips are merly to prevent the splint from slipping laterally. Usually the splint is removed the following day, when the elbow is put through the extremes of flexion and extension, always going merely to the limit of pain. The splint is then reapplied, this time endeavoring to gain more extension. It is most important that the elbow, at the time of the daily treatment, be carried back to the limit of flexion. This procedure is carried out daily until the extreme of extension is reached, or until it becomes evident that full extension cannot be obtained. By the foregoing method not only is extension gained, but flexion is constantly maintained.

It may be said that some of these cases are a long time in developing the normal motion, or the maximum amount of motion. This is quite true. While some patients will develop the maximum motion in a few weeks, there are others that will require six months.

Fig. 19 (Case 7).—Posterior displacement.

Time is not a very important element in the life of a child, and I feel that no time may be considered as wasted if the end-result is a good, useful elbow.

Summary

Number of cases	23
Known results	21
Posterior displacement	19
Anterior displacement	2
Lateral displacement	12
Reduction under full anesthesia.	
Reduction under fluoroscope.	
Physiotherapy after three weeks.	
RESULTS IN THE TWENTY-ONE KNOWN CASES	
Perfect	20
110 degrees motion	1
Percentage perfect	95 plus

Paulsen Building.

ABSTRACT OF DISCUSSION

DR. M. C. HARDING, San Diego, Calif.: I concur in all that Dr. Eikenbary has said regarding the character and treatment of these cases. In many of them there is so much swelling that it seems impossible to effect reduction. One should not wait for the subsidence of this swelling usually, because it will not occur within a reasonable length of time. If the elbow is so greatly swollen that the condyles cannot

be felt, the swelling should be reduced by massage until the condyles can be grasped. If it is impossible to get a good grasp in that way, a Thomas wrench should be applied, with the jaws on each side, and closed down carefully until a grip is secured on the lower fragment. This is dangerous in one way. Rotation is apt to result because the grip is more powerful than is realized; but it is a useful method. Reduction must be effected, however, and it is not complete until full flexion is secured easily. The retention by plaster is good but not always necessary. In those cases in which there has been a lateral displacement it is often quite useful. I have seen a few bad results from not getting the humerus and the condyles rotated correctly. In those cases the fluoroscope is indispensable. As to the time when passive motion should be begun, I should say, never. In no other fracture is it more dangerous. We should always begin with active motion, about the eighteenth day. I have often told interns that there is a psychologic day, almost a psychologic hour, at which the child can begin to use his arm. At that time the arm should be dropped to the point at which the child will put it naturally himself, and at no time after that is it necessary to hold the arm farther up. It can then be dropped from day to day, always taking advantage of the drop by gravity and never forcing it. To force one of these fractures is to invite trouble. I have seen many of these cases in consultation in which the joint had stiffened from motion. In fractures around the elbow there is more ossifying myositis

Fig. 22 (Case 7).—End-result; physiotherapy for two months.

than in any other place. Many patients who have lateral deviation in later years blame the physician for faulty setting. I believed this until I checked up a number of my own cases with the roentgen ray and found that there had been produced an overstimulation of one condyle, or a retarding action of growth, so that many cases which, at the end of six months had shown a perfect reduction, in three or four years showed a definite lateral deviation due to imperfect development.

DR. F. J. GAENSLEN, Milwaukee, Wis.: I commend the method that Dr. Eikenbary used and agree with him in most of the details. I have for the last few years used a method that I first saw in Sir Robert Jones' clinic, and that is the collar and cuff arrangement. I find it especially useful after a period of a week or ten days, when we can begin to lengthen the cord between the collar and the cuff to allow the arm to be extended gradually by gravity. I feel that the time to reduce these fractures is immediately before the swelling has appeared. The use of this method renders the entire extremity accessible, allowing use of a flannel compression bandage over cotton wool, attention being paid to the circulation. In case of impaired circulation, interference with radial pulse, cyanosis, etc., flexion must be reduced. In older cases, in which extension is rather difficult to obtain, the method described by Dr. Eikenbary is very valuable. Emphasis should be laid on the fact that too early forcible movement is very apt to be followed by serious consequences. Myositis ossificans is a real and serious condition when it develops. By avoiding forcible motion and letting the arm come down by gravity, at night putting the elbow up again into extreme flexion, so as to be sure of full flexion, I believe this hazard can be avoided.

DR. E. W. CLEARY, San Francisco: I have developed a technic, as a result of observing that supracondylar fractures in children are frequently put up in the Jones position of acute flexion without first pulling down and reducing the fracture. I would emphasize what Dr. Harding said about the time taken to reduce a fracture. If the average surgeon would spend a reasonable fraction of the time required to operate on a fracture in relaxing the muscles preparatory to

Fig. 25 (Case 9).—Patient had posterior displacement, which was reduced under the fluoroscope.

reduction, there would be less quarreling with the conservative methods of treating fractures, and less frequent operations. I have used a device for aiding in traction which helps hold the limb in reduction while putting on plaster. I believe that plaster is best for children's cases because it is the surest means of maintaining immobilization, and it is always available. The device used is a traction stirrup made by taking a straight urethral sound, size 26 to 30, the central portion of the sound being wrapped with eight or ten layers of sheet wadding. A sling is made by tying the ends of a strip of muslin bandage about 4 feet long to either end of the sound. The wrapped sound is placed in the antecubital space, and an assistant pulls down on the sling while another makes counter traction on another muslin sling around the body beneath the avilla. The surgeon's hands are free to hold the forearm and to manipulate the fracture. Swelling and edema are overcome by massage. There is no reason why one cannot feel the fragments of a supracondylar fracture in a child if a little time is taken to reduce the edema. Meanwhile the traction and forearm flexion are gradually increased. Sometimes, after as long

Fig. 26 (Case 9).—End-result; physiotherapy for three weeks.

as five or six minutes, one feels the displacement reduced and the fragments slip into place. Then flexion is further increased and, with traction continued, the cast is put on. After the plaster is set, the large sound is pulled out, thus relieving the pressure in the antecubital space.

DR. CHARLES A. PARKER, Chicago: I have no new method to put forward. There are always plenty of methods. The only point is that we should use the method that is best adapted to the case. Dr. Eikenbary spoke of that. He set the joint in the manner best adapted to that particular case,

and there are cases in which that is a most excellent position —full extension—to get the very best position. We run more risk of censure if we do that, but we always run that risk; and if we have to use our own judgment we may do that. There are one or two principles of the general treatment of fractures that he brought out that are very important. One is the immediate putting up of the fracture and not waiting for swelling. I think that this is one of the most pernicious

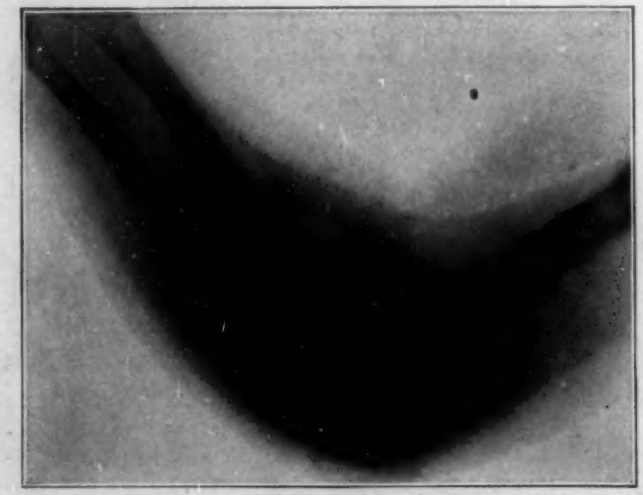

Fig. 30 (Case 11).—Posterior displacement.

and rather widespread teachings, that we have to wait for swelling to go down to put on a plaster cast. If that is true, it would be better not to put on a plaster cast, because we do not know how to use the plaster cast; and if we do not know how to use it, it would be better to wait for the swelling to go down and then forget all about putting it on. We should get the position and then put on the cast and do it intelligently. Fractures of the extremity should be made emergencies; they should not be permitted to lie around in the hospital until it is convenient for some physician to attend to them. If we want to do the best fracture work, we should do it immediately.

DR. FRANK LOWE, San Francisco: Dr. Eikenbary's method of placing the forearm at a right angle with the arm, or a little less than a right angle, is the keynote to the usefulness of the extremity after the fracture has healed. It makes no

Fig. 31 (Case 11).—Reduction obtained by open operation: reduction not quite perfect.

difference whether the fluoroscope is used, or whether we depend on manual palpation for the reduction of the fracture, so long as we effect a good reduction, and properly place the forearm at a right angle with the arm. The elbow joint should never be placed in extension with a supracondylar fracture; for, once the forearm is down, it is hard to bring it up to a right angle. On the other hand, at a right angle the forearm can always be brought down. If ankylosis or blocking of the joint takes place, which cannot be prevented in some cases, the forearm at a right angle with the arm is always the most useful position.

DR. WALTER G. STERN, Cleveland: This discussion has taken the course I feared it would when Dr. Eikenbary did not remind the man who is going to treat these fractures that the lower end of the humerus is not normally in line with the shaft of the humerus. It bends forward at an angle of about 45 degrees, and to reduce such a fracture properly the fragment at the lower end of the humerus must be reduced so that this angle of 45 degrees is restored. Dr. Eikenbary has not brought that out in his paper, nor did he show that in his first two or three cases. I do not think it matters very much in just what position we put up the elbow, if we have first restored the anatomic position of the lower end of the humerus. That must be done and then we shall not need to have an ice pick driven through the lower fragment, as one of the speakers advised. Another thing that Dr. Eikenbary did not speak of was the actual danger that is presented in each and every one of these fractures, namely, Volkmann's ischemic paralysis of the muscles of the forearm; and this danger, at least in my part of the world, a very real one. We see a relatively large number of such cases; and while I cannot enter into the discussion of the causation of this complication, I wish to say here that one thing the late J. B. Murphy taught us is not so, namely Murphy's dogmatic statement that the occurrence of Volkmann's ischemic paralysis is malpractice on the part of the physician who put up the fracture

Fig. 32 (Case 11).—End-result; physiotherapy for two weeks.

—that Volkmann's ischemic paralysis is always due to tight bandaging. Dr. Eikenbary did mention the circulatory disturbances in these fractures, but he did not bring out keenly enough that this danger was ever present. It is my belief that the fracture itself often damages the nerves or the blood vessels at the elbow joint; that the fracture itself is the etiologic factor producing Volkmann's ischemic paralysis, which must always be thought of. I said that if the fragment is properly reduced the actual position the elbow is put up in is not of the greatest importance; but instead of saying "Put it up in the position in which the fracture is best," please put it up in the position in which fracture and circulation both are best and always test the circulation of the radial pulse. Observe that carefully before you put up the elbow in acute flexion and put it up in the angle in which the circulation is best and the fragment is best placed. I would call attention, finally, to the dictum of the late Dr. Gillette that, in the physiotherapy of the disability following fracture of the elbow, we must avoid pain. Painful motion is the thing that Dr. Eikenbary has said is harmful; and if we will remember Dr. Gillette's experience at San Francisco with a child of an officer of the Presidio, in which Dr. Gillette was going to give a general anesthetic and "break up the adhesions," and they refused; and then when he saw the case six or eight months later the elbow had a perfect range of motion with a perfect cure of the disability, we will readily agree with him. Dr. Gillette's rule of avoiding painful motion is as true today as it was years ago.

DR. C. F. EIKENBARY, Spokane, Wash.: There were a great many points brought out by Dr. Stern that I should have been glad to cover in the paper; but it was made for a brief paper and not meant to go into the anatomy of the elbow joint or into the various complications that might arise. To have gone into all that I felt would have taken entirely too much time. I want to say that I am very grateful to Dr. Parker for the remark he made in regard to fractures of the elbow or fractures elsewhere, in respect to regarding them as emergencies. They are emergencies, and the time to reduce a fracture of the elbow is as soon as possible after the fracture has occurred. I make it a rule, if I get one of these cases at 1 o'clock at night, to have a roentgenogram made at once and to reduce the fracture then and not wait until next day, because delay is always pernicious.

BRONCHOMYCOSIS ASSOCIATED WITH CERTAIN TYPES OF BRONCHIAL ASTHMA *

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Though severer types of pulmonary mycoses, such as nocardiases (streptothricosis, actinomycosis, etc.) blastomycoses and coccidioses have been noted in this country, the existence of bronchomycosis of a mild and chronic type and particularly associated with certain cases of asthma and chronic bronchitis has received little attention. A study of yeasts of the genera *Monilia, Cryptococcus* and *Endomyces,* which were found in great numbers and even as colonies in the sputums of these patients, has been noted in another communication.[1] The description of the clinical course and other features of these cases has been deemed sufficiently interesting to record. Of the fifteen patients studied in detail, seven were men and eight were women. The youngest patient, a woman, was 25 years of age; the oldest, a man, was 60. The majority were in the fourth decade of life. Though five patients were born in Russia, all were residents of Philadelphia, and contracted asthma or chronic bronchitis in this city. With one exception, they gave negative histories as to sensitization to proteins (food, keratoproteins and pollens). The history of one patient (A. K.) who gave a suggestive history of pollen sensitivity is outlined under the description of several individual cases. These patients were all tested with varying numbers of test proteins, including the usual foods, pollens and keratoproteins (epidermals) by the cutaneous method, and in several instances by the intracutaneous method. In some instances, from fifty to sixty proteins were used. House dust was not, however, used in these tests. In none of the patients were there any positive reactions, and, as noted by the age period or history, a state of allergy would not ordinarily be predicted for most of them.

The history elicited in these patients was that noted in many cases of bronchial asthma with associated bronchitis. There was more or less constant cough, with relief during periods of free expectoration; all had paroxysms of expiratory dyspnea, often at night, with audible wheezing from the chest. On examination during active stages sonorous and sibilant râles were usually heard over both lungs. By some, this type of asthma has been designated "asthmatic bronchitis." In those patients with conditions analogous to the types described by Castellani [2] as broncho-alveolar mycosis, there were, in addition, subcrepitant râles. The latter at times simulated bronchiectasis, tuberculosis and other chronic conditions. The absence of percussion changes, the presence of eosinophilia and the fairly prompt disappearance of signs under appropriate treatment were, however, in marked contrast to the severer pulmonary diseases. The short history of Patient 2 is an example of this type. The sputum, raised obviously from the deeper portions of the respiratory tract, was usually characteristic in both types of cases. Embedded in the surrounding mucus were to be found areas varying from white, chalklike particles to actual islands composed of colonies of yeasts. Occasionally, these areas were amber-colored. With fresh, unstained specimens under the high-power objective, these areas often consisted of globular, fatlike spores. In several instances, usually during severe stages, they consisted of developed hyphae and mycelia. It is not unusual to find similar yeast spores in the sputum of other pulmonary conditions, such as tuberculosis, and even in normal secretions. In these cases, they are not apt to be so numerous nor to be found in as large colonies, and might therefore be interpreted as leading a saprophytic existence comparable to that of pneumococci harbored in normal persons. Charcot-Leyden crystals were noted in four instances, and eosinophils were found in the sputum in all cases.

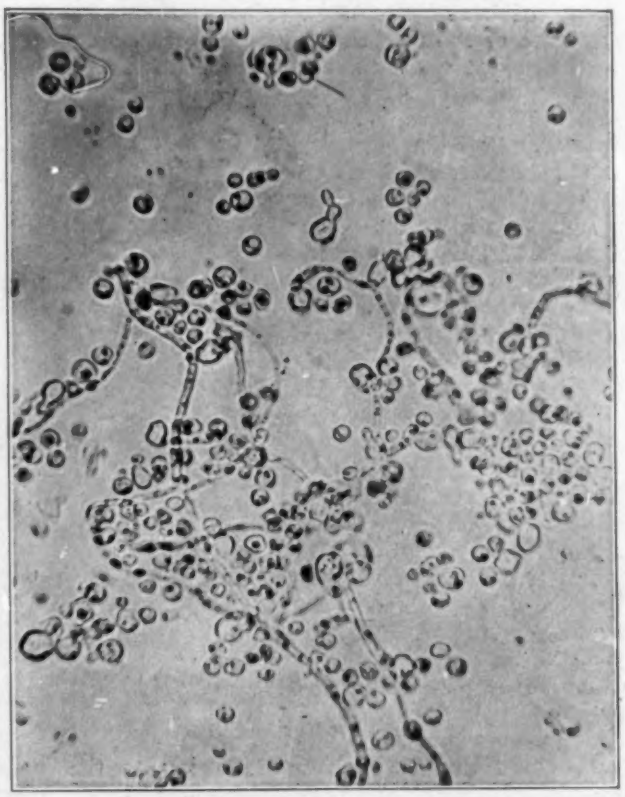

Fig. 1.—Hanging drop appearance of culture of Monilia under high power.

Cultures of the particles in Sabouraud's maltose agar adjusted to p_H 5.2 yielded yeasts of the genera *Monilia, Cryptococcus* and *Endomyces.* The cultural and biochemical characteristics of some of these are noted in the communication mentioned heretofore. These can be

* From the Medical Division of the Graduate School of Medicine, University of Pennsylvania.

1. Steinfield, E.: J. Lab. & Clin. Med. 8:744 (Aug.) 1923.

2. Castellani, A., and Chalmers, A. J.: Manual of Tropical Medicine, New York, William Wood & Co., 1919.

summarized by stating that acid and gas were frequently produced in glucose, levulose, maltose and saccharose; that galactose, inulin, lactose, mannitol, raffinose and salicin were occasionally fermented; arabinose, dextrin and dulcitol were practically not at all fermented. Litmus milk was rendered acid and coagulated by nearly all the strains; gelatin was liquefied by only two. Those classified as *Monilia* appeared to belong most nearly to the group of *M. pseudotropicalis* (Castellani) though not entirely conforming to all the biochemical properties of this group.[3]

The production of eosinophilia in exudates and blood after intraperitoneal and intratracheal injections into guinea-pigs of suspensions of cultures was constantly noted. A 1 per cent. suspension in doses of 2 c.c. for intraperitoneal injection was usually sufficient to produce this effect. Intratracheal injection of several drops of these suspensions into guinea-pigs after exposure of the trachea in the neck produced quite a marked blood eosinophilia in some instances. A portion of a blood slide from one of these animals is shown in Figure 2. The property of inducing eosinophilia is noted in many yeasts and other fungi isolated from other sources. These observations have nothing in common with the anaphylactic eosinophlia noted by Schlecht and Schwenker,[4] since no previous sensitization was present in the animals under discussion. Complement fixation reactions with the serums of patients and homologous yeasts were found to be of equivocal value. Agglutination reactions, as they have been applied up to the present, were not found to yield additional information of value beyond that given by the methods outlined above. Intracutaneous reactions could not be interpreted, owing to the irritating properties of the suspensions that were employed.

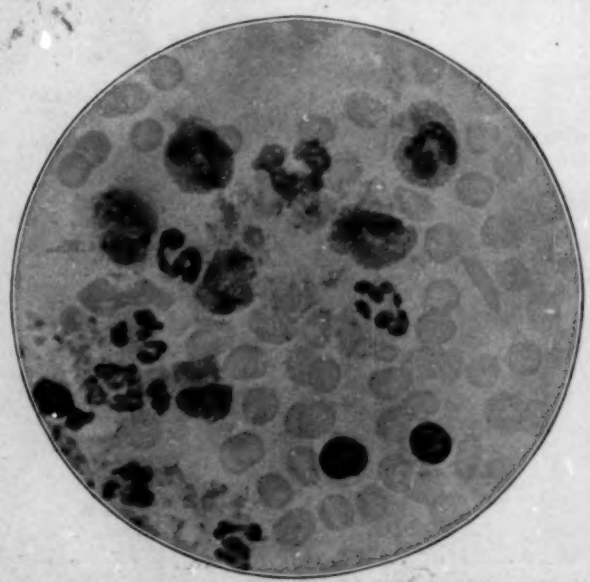

Fig. 2.—Blood slide from guinea-pig after intratracheal inoculation with Monilia suspension, showing eosinophils as cells with dark granules.

TREATMENT

Iodids have been found to have the same value as was noted in many cases of bronchomycosis in the tropics. The dosage ranged from 2 to 4 gm. a day. In several patients, tar in the form of pix liquida, 1 gm. a day or more, was efficacious. Vaccines were prepared after the method of Michel.[5] Improvement appeared to be facilitated by the injections of these suspensions in dosages of 0.1 or 0.2 c.c., increasing to 1 c.c. Marked local reactions at the site of injection were rather frequent. This method can be said to have received, as yet, only a tentative trial. In all cases, a thorough examination of the upper respiratory tract is necessary to detect abnormalities or disease of the nasal passages, tonsils and sinuses particularly. Many of these patients exhibit such abnormalities, the eradication of which materially increases the possibility of relief for an extended period. It is probable that these defects act by interfering with proper pulmonary ventilation or by acting as reservoirs of infection, either bacterial or mycotic.

The two cases reported here combine many of the features under discussion.

REPORT OF CASES

CASE 1.—A. K., a white woman, aged 25, who had suffered with asthma since an attack of pertussis at the age of 14, was seized, three months before admission in February, 1923, with an attack so severe that she was confined to bed for four weeks because of the severity of the cough and dyspnea. Complete examination and laboratory studies excluded cardiac and renal disease and other possible underlying causes. Roentgen-ray examination of the chest was negative, with the exception of some peribronchial fibrosis. Examination and roentgenograms revealed a left ethmoiditis. The blood pressure was 120 systolic and 70 diastolic. The Wassermann reaction was negative, and blood slides showed an eosinophilia of 6 per cent. Examination of the chest elicited diffuse sibilant and sonorous râles, and a few subcrepitant râles on both sides, with no impairment of the percussion note. Expiration was prolonged on auscultation of both lungs. Cutaneous tests with spring and fall pollens, epidermals (including dog hair, cat fur, horse dander, chicken feathers and goose feathers) and many of the usual food proteins all yielded negative reactions. House dust was not used. In the first specimens of expectoration were noted large white islands of 2 to 3 cm. in diameter, exactly resembling pieces of cracker or biscuit. These proved to be colonies of the genus *Monilia*. Charcot-Leyden crystals and eosinophils were present in the sputum. Improvement under iodids was sufficiently marked to enable the patient to undergo tonsillectomy with procain anesthesia. After discharge from the hospital, she had only moderate attacks at night. She received, at weekly intervals, four subcutaneous injections of *Monilia* suspension made from the cultures isolated from the sputum in doses from 0.2 to 0.7 c.c. The method of preparation was that described under the heading of treatment. At this time, attacks were practically abolished, with the exception of slight wheezing at night. On examination of the chest at the clinic, no râles were heard. The sputum was also found free of large colonies, and contained barely visible particles composed of spores without actual mycelia.

Improvement under iodids in the type of case designated as broncho-alveolar mycosis is noted in the history of Case 2.

CASE 2.—I. C., a negress, aged 42, complained chiefly of continuous cough and wheezing without any untoward effect on her general health. This condition had existed for ten years, with periods of exacerbation. On examination, the chest was found to be full of subcrepitant râles and scattered

3. One culture examined in the laboratories of the Army Medical School was reported by Asst. Adj. R. A. Dickson to give similar cultural reactions to that of Monilia psilosis.

4. Schlecht, H., and Schwenker, G.: Arch. f. exper. Path. u. Pharmakol. **68**: 163 (May) 1912.

5. Michel, C.: J. Infect. Dis. **22**: 53 (Jan.) 1918. Briefly, this method is as follows: Four-day cultures incubated at 37 C. were emulsified in distilled water, placed in a shaking machine for two hours, and then incubated at 37 C. for five days to complete autolysis. The suspension was then heated at 56 C. for one hour, cultured for sterility, and preserved with phenol (carbolic acid) to a concentration of 0.5 per cent. The concentration of the yeast suspension was sufficient to give a sediment of 0.1 c.c. when 10 c.c. of material in a graduated centrifuge tube was centrifugated at about 1,000 revolutions per minute for five minutes.

sibilant râles, giving the impression of extensive pulmonary involvement not confirmed, however, by percussion changes. The sputum was repeatedly negative for tubercle bacilli, but contained eosinophils and large numbers of yeasts of the genus *Endomyces*. There was a blood eosinophilia of 8 per cent. Sensitization tests with pollens, food proteins and keratoproteins yielded negative results which accorded with the absence of a characteristic history of sensitivity to these proteins. Potassium iodid in doses of 2 gm. a day produced a striking amelioration of cough and expectoration. After three weeks of this treatment, the chest was almost entirely free of râles. This improvement was unchanged for a period of three months, with only occasional use of iodids during this time.

SUMMARY

In a series of fifteen patients with bronchial asthma and chronic bronchitis in whom an allergic state with regard to the usual pollen, epidermal and food proteins was not demonstrable, a condition of bronchomycosis was noted.

Eosinophilia was constantly discovered in the blood of these patients and in animals inoculated with cultures of the yeasts isolated from the sputum of these patients.

Iodids and injections of suspensions of these yeasts produced favorable results in this series.

2035 Chestnut Street.

ASCARIASIS OF INTRAHEPATIC BILE DUCTS

WITH CALCULUS FORMATION, DILATATION OF DUCTS, AND CHRONIC CHOLANGEITIS *

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Authoritative figures indicate that *Ascaris lumbricoides* has a wider geographic distribution and infests a larger number of people than any other known

Fig. 1.—Portion of the liver, showing ascarid in a dilated bile duct.

intestinal parasite. And since the worm in both its larval and adult stages is actively migratory, it is not surprising that disturbances resulting from the presence of the parasite in organs other than the intestine should be frequently reported. The lesions in the lungs and elsewhere caused by the larval migrations are well described in recent papers by Fülleborn,[1] Stewart [2] and others. The varied wanderings of the adult worm are

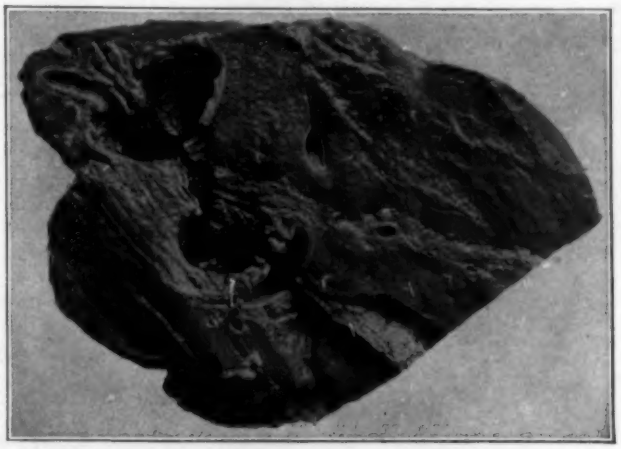

Fig. 2.—Markedly dilated and thick-walled bile ducts, containing large, irregularly shaped calculi.

fully considered in all textbooks on parasitology and tropical medicine (Brumpt,[3] Fantham,[4] Chandler,[5] Castellani and Chalmers,[6] and Manson [7]). Only a few general statements, therefore, need be recorded here, by way of introduction to the report of a case of extra-intestinal ascariasis showing certain interesting features.

Following the line of least resistance, ascarids most often migrate into the upper alimentary tract, esophagus and pharynx, whence they may pass readily either into the upper or the lower air passages. In the latter circumstance there may be serious results. That the worm can make its way directly through the intestinal wall was maintained by Rokitanski,[8] but Gerhardt, while admitting this possibility, thinks that in such cases a previous lesion of the bowel probably existed. Whatever the method of exit, ascarids have been found free in the peritoneal cavity and in hernial sacs.

Next to the upper alimentary tract, probably the most common route of migration of the adult worm is into the bile and pancreatic ducts. Tsujimura [9] recently reviewed thirty-three published cases in which ascarids had been found in the bile ducts, and during the last year instances of serious disturbance in the pancreas, from obstruction of its ducts by ascarids, have been reported by Noves,[10] Rigby [11] and Cintra.[12] in Noves' case there was obstruction of the duct of Wirsung by a living worm, which was removed by operation. The patient recovered. In the case reported by Rigby, there was obstruction of the main pancreatic duct. The patient succumbed from a hemorrhagic pancreatitis.

* From the Instituto de Anatomia Pathologica, Faculdade de Medicina e Cirurgia.

1. Fülleborn: Ueber die Wanderung von Askaris und anderen Nematodenlarven in Körper, Arch. f. Schiffs- u. Tropen-Hyg. **25**: 146-149, 1921.
2. Stewart, F. H.: On the Life History of Ascaris Lumbricoides, Parasitology **13**: 37, 1921.
3. Brumpt, E.: Précis de parasitologie, Paris, 1923, p. 536.
4. Fantham: Animal Parasites of Man, London, 1916, p. 689.
5. Chandler: Animal Parasites and Human Disease, New York, 1918, p. 275.
6. Castellani and Chalmers: Manual of Tropical Medicine, Ed. 3, New York, 1919, p. 1775.
7. Manson: Tropical Diseases, Ed. 7, New York, 1921, p. 657.
8. Quoted by Fantham (Footnote 4).
9. Tsujimura: Ueber der Ascariasis der Gallenwege, Deutsch. Ztschr. f. Chir. **171**: 398, 1922.
10. Noves: Partial Obstruction of the Pancreatic Duct by Roundworms, Brit. J. Surg. **10**: 421, 1923.
11. Rigby, H. M.: Acute Hemorrhagic Pancreatitis: Roundworm in Pancreatic Duct, Brit. J. Surg. **10**: 419, 1923.
12. Cintra, P.: Personal communication to the author.

Cintra successfully removed a single worm from the pancreatic duct, and Kanert [13] recently reported a case in which he had taken ten ascarids from the hepatic and gall ducts. These few references are sufficient to indicate the importance of the migratory phenomena.

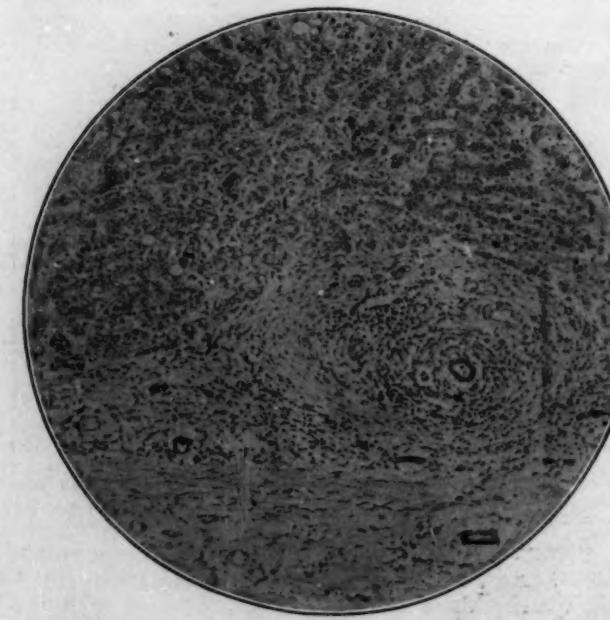

Fig. 3.—Marked periductal fibrosis with diffuse round cell infiltration; × 90.

REPORT OF CASE

A middle aged woman was brought to the Santa Casa de Misericordia in Santos (Brazil) in a moribund condition. She died within a few hours after admission to the hospital, and no clinical data on the case were obtained. Permission for a necropsy was granted, and in the absence of the pathologist the examination was made by a member of the clinical staff, to whom I am indebted for the opportunity to report the case. No definite pathologic changes were found in any of the organs, except the liver, which was preserved in toto.

In subsequent examination of the specimen, I noted that the liver was markedly enlarged, weighing 2,000 gm. and measuring 26 by 16 by 8.5 cm. The external surface was reddish yellow, and the consistency was definitely increased. The bile ducts throughout the organ were dilated, and their walls were markedly thickened. This thickening, or periductal fibrosis, extended even to the smallest ramifications of the canals. As the result of this change, the usual uniform lobulation was absent. In places, however, the lobules were clearly outlined by the fine, whitish, fibrous bands.

In one of the large intrahepatic branches of the duct, an adult, well preserved ascarid was found (Fig. 1). The worm was curled on itself roughly in the form of the figure 8, so as completely to occlude the duct. In other ducts, large and small, soft, friable calculi of dark brownish yellow were encountered. Some of these were quite large, completely filling the dilated canal; others were only 2 or 3 mm. in diameter. All were quite irregular in form, and were without facets. The great size of the ducts and the gross character of the calculi are well shown in Figure 2.

The extrahepatic ducts were free from calculi; but in the gallbladder several small ones were found. The sac was not dilated, and the wall appeared normal.

Microscopically the liver presented a very interesting picture, which varied considerably in different parts. The outstanding feature of all sections, however, was the presence of a wide zone of fibrous tissue about the bile ducts. This was so marked that the spaces of Kearnan appeared as large islands of proliferating connective tissue, with a bile duct in the center. In these areas, and particularly about the blood vessels, one saw an infiltration by lymphocytes, plasma cells and eosinophils, and in smaller numbers these cells were diffusely scattered through the fibrosed areas (Figs. 3 and 4). In places an accumulation of polymorphonuclear leukocytes also was seen, but with no tendency to definite abscess formation. In brief, the inflammatory reaction was predominantly chronic and proliferative in type.

Alteration in the parenchyma, particularly in the bile duct epithelium, constituted a very striking feature. In the periductal zone of fibrosis were many newly formed bile ducts, presenting apparently all stages of development. Some were made up of small, solid nests of cells; others showed well formed lumina. In places, the extent of this epithelial proliferation was such as to suggest an adenomatous overgrowth.

The liver cells in general were vacuolated, indicating the presence of fat (Fig. 4). There were no foci of necrosis. Special connective tissue stains showed that the fibrosis was everywhere periportal, with little tendency to extend into the liver lobule.

COMMENT

The case illustrates well one of the serious complications of *Ascaris* infection. It differs from the majority of the previously reported cases of ascariasis of the liver in that a chronic productive inflammatory reaction, rather than a suppurative process, resulted. Brumpt, Manson, Rolleston [14] and others emphasize the tendency to abscess formation in such cases, and Leer [8] regards *Ascaris* as second only to *Ameba histolytica* as a cause of liver abscess.

That abscess formation should commonly result from hepatic ascariasis is readily understandable, since the worm must inevitably carry from the intestine some of the bacterial flora present there. In the present case we may assume either that the bacteria carried were of very low virulence and incapable of inciting a suppurative reaction, or that the infection had been overcome

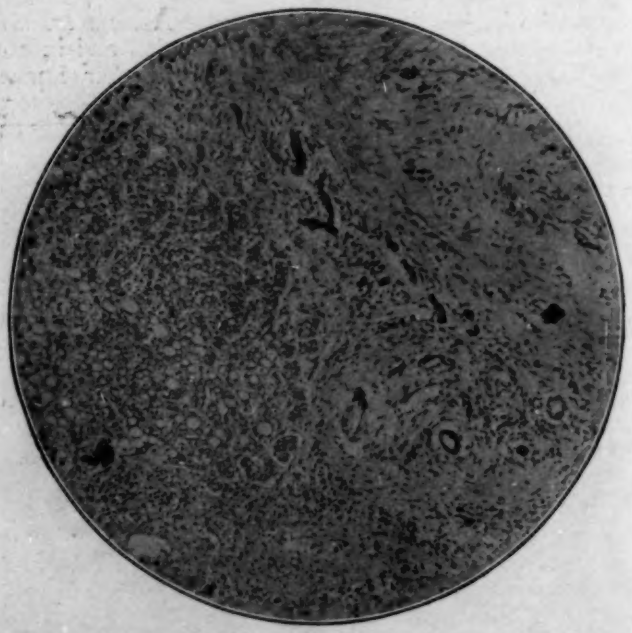

Fig. 4.—Periductal fibrosis, proliferation of bile ducts, and fatty vacuolization of liver cells; × 90.

by the tissues. The generalized dilatation of the ducts and the marked periductal fibrosis indicate that the process had existed for a considerable time. Although only one worm was found in the liver, it seems prob-

13. Kanert, W., quoted in editorial in Brazil Med. 37: 182 (March 31) 1923.

14. Rolleston: Diseases of the Liver, Gall Bladder and Bile Ducts, London, 1914, p. 682.

able that the soft calculi and débris in all the large intrahepatic ducts were the result of the presence of other worms, which had died and become disintegrated. This interpretation is supported by the failure to find any extrahepatic cause of dilatation.

CARCINOMA OF THE SUPRARENAL ASSOCIATED WITH UNUSUAL ENDOCRINE MANIFESTATIONS *

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AND
WALTMAN WALTERS, M.D.
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That the suprarenal cortex is related to the growth of the body and to the development of sex characteristics is well recognized. It has been observed, further, that tumors arising in this area have been associated with marked changes in bodily development and nutrition, and even more striking have been the anomalous sex manifestations presented in such disease.

Bulloch and Sequeira,[1] in 1905, compiled twelve cases of neoplasm of the suprarenals in children, the tumors belonging to the hypernephromatous or carcinomatous type. These children consistently showed precocious growth and development of strength, early development of the sex organs, and an overgrowth of fat and hair. Glynn,[2] in 1912, added five cases to these, making seventeen in all, fourteen females and three males. The precocious sexual development, even in females, was always toward the male type, with occurrence of beards, absence of menstruation, and hypertrophy of the clitoris in the majority of cases. Glynn also presented six cases of suprarenal hypernephroma in young women, associated with striking changes in sex characters toward the male type, and six similar cases with less striking sex manifestations. He compiled thirteen cases of pseudohermaphroditism, associated with bilateral hyperplasia of the suprarenals or with ectopic suprarenal rests; twelve of these cases were in females. This author concluded from a comprehensive study that hypernephromas of the suprarenals were epithelial growths of cortical origin. They were found to be invariably associated with sex abnormalities in children, and usually in women before the menopause. Adult men, and women after the menopause, did not show sex abnormalities when affected with this disease.

The following case has recently come under our observation at the Mayo Clinic, and is worthy of presentation because of the striking changes in sex characteristics, together with other endocrine abnormalities of pronounced degree.

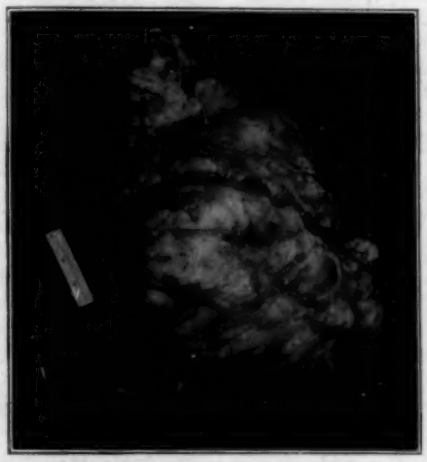

Fig. 1.—Gross specimen of suprarenal carcinoma.

REPORT OF CASE

Mrs. J. G., aged 37, the mother of ten children, was admitted, Feb. 7, 1923, complaining of goiter, weakness and skin trouble. She had had an attack of typhoid fever in 1895, and one stillbirth a number of years before examination. The menses had appeared but once or twice between pregnancies, and since the last pregnancy, three years before, she had not menstruated. Two years before admission, the patient had noticed an enlargement in the thyroid gland; since that time the size had increased but slightly. However, moderate nervousness, occasional tremor, intermittent attacks of precordial pain and a jerking sensation in the heart had been noted. Intolerance for heat, perspiration, fatigue and dyspnea, with choking sensations, all brought out on moderate exertion, had been troublesome. Her appetite had increased, and she had gained 30 pounds (13.6 kg.) in weight, but in spite of this she had lost strength and vigor. The patient complained of slight mental dulness.

Eighteen months before admission, a blotchy erythema had appeared over the shoulders and chest. This lesion had produced no subjective symptoms, but the erythema had been followed by a papular and later a pustular eruption. The skin had become oily, and numerous blackheads had appeared in association with the pustules. This acneform eruption had spread gradually over the entire body surface, with the exception of the hands and feet. Surrounding each of the papulopustular lesions was an area of dull red erythema. Six months after the onset of the skin lesion, the hair of the face, arms and chest began to increase in amount. This hirsuties had become so excessive that the patient had recently been forced to shave the face, and as the body hair increased in amount, that of the scalp became thin.

For the last year the patient had been troubled with a salty taste in her mouth, and six months before admission a form of stomatitis had developed. The quality of the voice had become increasingly coarse for over a year. During this time the patient had also suffered from a dull aching pain in the back, which was made worse by stooping or exercise. Twice in January, 1923, after severe exertion, she had expectorated a slight amount of bright blood.

At the time of examination, the patient weighed 130 pounds (59 kg.) and was apparently well nourished. The skin immediately impressed the observer with its oiliness. Distributed over it with fair uniformity were papules, encrusted pustules, and numerous comedones; these were generally surrounded by an area of dull erythema. A marked degree of hypertrichosis of the face, chest and limbs was noted. The hair of the head was coarse and stringy, and a diuse alopecia was present. The papillae of the tongue were smoothed out along the center. A furry stripe ran down either side. The mucosa of the mouth and that of the vaginal introitus were red and tender. The thyroid gland was definitely enlarged, with a small, firm adenoma in the lower pole on the right side; aside from râles in the bronchi and roentgenologic evidence of old tuberculosis at the right apex, examination of the chest was negative. The abdomen was diffusely tender, and a smooth mass was palpable below the left costal margin anteriorly. On examination, the size and distribution of the organs were normal. Paronychia on the left great toe, and an inflammation of the left elbow were noted. Roughening of the olecranon was revealed by a roentgenogram. The urine contained a moderate amount of albumin, and sugar was present in the twenty-four hour specimens in amounts varying from 5.9 to 6.5 gm. Occasional pus and blood cells were found. Examination of the blood revealed hemoglobin, 80 per cent. (Dare); erythrocytes, 5,290,000, and leukocytes 12,900, with normal differential count. The blood sugar was from 0.111 to 0.143 per cent. The blood

* From the Section on Surgery, Mayo Clinic.

1. Quoted by Glynn (Footnote 2).
2. Glynn, E. E.: The Adrenal Cortex, Its Rests and Tumours; Its Relation to Other Ductless Glands, and Especially to Sex, Quart. J. Med. 5: 157-192, 1911-1912.

urea varied from 34 to 38 mg. for each 100 c.c. The blood pressure ranged from 124 systolic and 90 diastolic to 180 systolic and 110 diastolic. The pulse varied from 100 to 130, and the temperature from 98 to 100 F. Roentgenograms revealed a normal sella turcica. The basal metabolic rate varied from + 15 to + 28 per cent.

Exploration was made, Feb. 28, 1923, through a left oblique incision. A large tumor attached to the left kidney was separated and removed between clamps. The tumor was about 25 cm. in diameter. The cavity was packed with gauze, the end of which was brought out of the wound through the wrist of a rubber glove closure. The patient recovered well from the anesthesia, but within twenty-four hours elevation of pulse and temperature and onset of drowsiness ensued. A low indeterminate systolic blood pressure was noted. This continued for twenty-four hours, during which time a transfusion of citrated blood was given, followed by slight favorable reaction. The blood pressure continued low, the pulse and temperature elevated. Epinephrin was given subcutaneously and by rectum. On the fourth day the patient went into coma, and died after several hours of unconsciousness.

At necropsy, a recent incision for removal of a tumor of the left suprarenal, hypoplasia of the right suprarenal, early hemorrhagic bronchopneumonia, terminal acute hepatitis and nephrosis were observed. Male habitus, acne and hemorrhagic fat necrosis in the pancreas were also noted. The follicles of the thyroid gland were distended with colloid, and the epithelium was flattened. The pituitary and pineal bodies and the ovaries were normal.

The tumor removed at operation was somewhat rounded, yellowish and nodular (25 cm. in diameter); on cross section, several areas of buttery coagulation necrosis were noted. Surrounding these, were areas of parenchymatous tissue interlaced with fibrous tissue. The center of the tumor seemed more necrotic than the periphery (Fig. 1).

Microscopically, the tumor consisted of small cells of equal size. These were polygonal or round, and showed some effort at cordon arrangement, such as the zona fasciculata of the suprarenal presents. The cytoplasm of the cells stained poorly, and vacuolization was marked. The nuclei were granular, and contained prominent nucleoli; adjacent to the areas of coagulation necrosis, the nuclei were more pyknotic and the cytoplasm had lost its identity. The gross and microscopic pictures corresponded closely with those described by Glynn and others as malignant suprarenal hypernephromas (Figs. 2 and 3).

Fig. 2.—High power photomicrograph of cellular growth, showing tendency of cells to cordon arrangement.

COMMENT

Much dispute has been made as to whether these tumors should be designated hypernephroma (Kaufmann [3]), carcinoma (Ribbert [1]), mesothelioma (Adami [4]) or suprarenal epithelioma (Marchand [1]). This is of the same order as the discussion over the renal hypernephromas, and is really of more significance embryogenically than clinically. Because of the epithelial appearance of the cells and their probable origin from the epithelial suprarenal cortex, itself of mesoblastic origin, we have adopted the term carcinoma. These tumors are slow to metastasize and are not always fatal. In several of the cases described by Glynn, the patients lived and recovered from their endocrine dyscrasias after surgical removal of the tumors. However, most of the patients died, and in many, metastasis had taken place, the liver and lungs being most often effected.

The case reported here is of interest because enlargement of the thyroid, nervousness, tremor, tachycardia, hyperhydrosis, heat intolerance, dyspnea, choking sensations, precordial distress, increased appetite, increased metabolic rate, and hypertension were associated with suprarenal carcinoma. The dyscrasia of the skin and pilosebaceous systems manifested by erythema, acne, comedones and hypertrichosis, redness of the mucosa, and atrophy of the lingual papillae, weakness, fatigue, alopecia and suppression of menses, the change in voice, the increase in weight, all are suggestive of perverted function of the suprarenal cortex as determined from previous clinical evidence. The hyperglycemia and glycosuria are difficult to account for. In a cursory review of the literature, we have not found such an association of symptoms mentioned. The death following operation was of a type suggesting insufficiency of the suprarenal medulla, and the small suprarenal found on the right side more or less confirmed such a view.

Fig. 3.—Photomicrograph showing area near the necrotic portion of the tumor.

3. Kaufmann, E.: Lehrbuch der speziellen pathologishen Anatomie, Eds. 7 and 8, Berlin and Leipzig, W. DeGruyter 2: 1006-1008, 1922.
4. Adami, J. G.: The Principles of Pathology, Philadelphia, Lea and Febiger 2: 704-705, 1908-1909.

THE PHENOLTETRACHLORPHTHALEIN LIVER TEST

IN CASES OF ACUTE AND CHRONIC SYPHILIS UNDER TREATMENT AND IN VARIOUS SKIN DISEASES *

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AND
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PHILADELPHIA

Ordinarily, in treating syphilitic patients with the newer arsenicals, nothing indicating the development of a toxic action on the liver is known until an icterus develops. Furthermore, if permanent liver damage occurs with or without the presence of clinical signs (since clinical symptoms are not necessary to the presence of a low grade hepatitis) the physician, until now, could certainly know nothing of it. In patients who develop a toxic hepatitis in the course of antisyphilitic treatment, clinical cure is the rule (although in a few cases the severity of the hepatitis leads to a fatal outcome), and it has been generally assumed that the liver, at least functionally, returns to normal.

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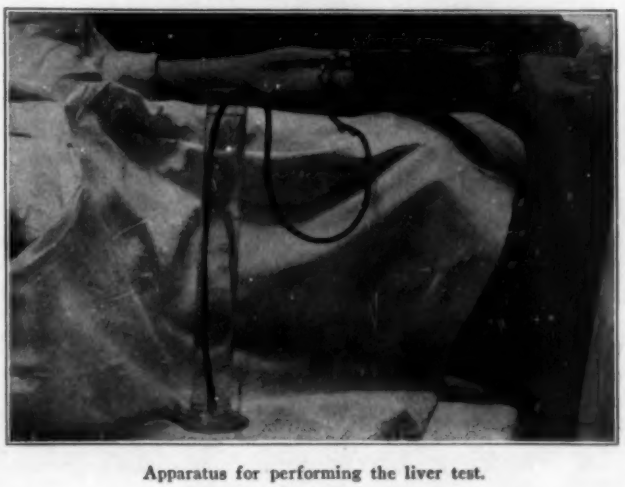
With the reputation for liver-cell affinity possessed by arsenic, and therefore the arsenobenzenes, and with the widespread use of these drugs and other related arsenicals, it would seem, from the facts stated above, as important to know the functional status of the liver before instituting antisyphilitic treatment (certainly in those patients showing varying forms of intolerance to these drugs) as it is to know the condition of the kidneys. This study was undertaken in view of this as well as for other reasons enumerated below.

Originally, Dr. Bockus of the gastro-intestinal clinic and one of us used the duodenal method, but with the appearance of the Rosenfield-Schneiders [1] technic based on the studies of Rosenthal [2] and slightly simplified by us, the duodenal method was abandoned for this simpler and more accurate method. The ease with which the test can be performed may be seen in the accompanying illustration. The amount of dye calculated on the basis of 5 mg. per kilogram of body weight is drawn into the syringe of the Dunn apparatus. An adaptable needle is then introduced into the vein, and the blood for the normal serum comparison obtained. The syringe is now attached to the needle and the rubber tube placed in the warm salt solution. The dye is diluted by pulling out the plunger, and the resultant diluted dye is slowly forced into the vein. The two-way stopcock has an automatic valve, which opens to admit salt solution when the plunger is drawn out and closes when it is forced in. Time is calculated from the second emptying of the syringe, which practically washes out all the dye.

Although Abel and Rowntree [3] say, and we agree, that this dye, injected intravenously, is not toxic, yet it should be noted that the test is not without its occasional untoward reactions; namely, burning along the vein injected if injection is given too rapidly, late thrombosis, chills, faintness, sweats, and pain in the hepatic region.

Since the advent of the arsenobenzenes in 1911, considerable speculation has occurred with regard to the effects of these drugs in therapeutic doses on the liver, and especially with regard to the permanence of liver damage in the toxic icterus occurring in syphilitic patients during the course of this type of therapy. That these drugs, even with only two or three injections, may cause injury to or autolysis of the liver cells is generally known. Clinical and postmortem findings seem to confirm this, although etiologic factors based on these grounds alone cannot always be certain. However, Kolmer and Lucke [4] have definitely shown, experimentally in animals, that not only toxic but even therapeutic doses will in the first instance produce marked focal necrosis, and in the second instance slight structural changes in the liver. Therefore, even in therapeutic doses most syphilographers are today in accord in considering that icterus developing in the course of treatment with these drugs is in most instances toxic in origin. This opinion is strengthened because of the well known affinity arsenic has for the liver, which retains it for a long time, because it is supposed that the arsenobenzenes are to a considerable extent stored in the liver and because it has been shown [5] that arsphenamin may even cause jaundice in nonsyphilitic patients. In this connection, it is interesting to note that an increase of arsphenamin toxicity for the liver and kidneys could not be demonstrated in animals in whom hepatitis and nephritis had been induced by the administration of phosphorus, chloroform, mercuric chlorid and uranium nitrate.

Although it is not possible, ordinarily, to differentiate a toxic jaundice from other forms occurring during the course of antisyphilitic treatment, yet permanence of the damage may be easily determined. However, as will be shown later, a belated diagnosis can be made, since the presence of impaired liver function in a treated syphilitic patient who had had a jaundice some six months or more previous to the test would point to its toxic rather than to its infectious origin. In acute infectious diseases, structural alterations in organs, as, for example, the liver, are generally followed by repair without permanent functional damage; but in toxic affections, on the other hand, if at all severe (as when icterus develops), this is not the case at all.



Apparatus for performing the liver test.

In 1920, Widal, Abrami and Iancovesco,[6] with their proteopexic hemoclastic crisis test, studied certain phases of our problem and came to the conclusion that hepatic alterations are constant during the course of neo-arsphenamin (French) therapy, and that these appear early even when but small doses are used, and may persist for several weeks after cessation of treatment. In most cases, latent hepatic disturbances occur (icterus is rarer, although clinicians have been basing their diagnosis of toxic disturbances on this clinical sign). Alterations, based on a study of three cases, developed from forty-eight to sixty hours after one and two injections, and these alterations lasted three days in one case, and several weeks and even several months after the cessation of treatment in other cases.

Until recently, many of our patients were treated exclusively with arsphenamin and neo-arsphenamin (D. R. L.), the purpose of which was to determine definitely for ourselves whether or not these drugs, when used alone, could cure syphilis. We now know that a certain proportion of patients with syphilis (primary and secondary) will unquestionably respond favorably to such exclusive antisyphilitic treatment, whereas a larger proportion (with tertiary syphilis,

1. Rosenfield, H. H., and Schneiders, E. F.: Improved Phenoltetrachlorphthalein Test for Liver Function, J. A. M. A. **80**: 743 (March 17) 1923.
2. Rosenthal, S. M.: A New Method for Testing Liver Function with Phenoltetrachlorphthalein, J. A. M. A. **79**: 2151 (Dec. 23) 1922.
3. Abel and Rowntree: J. Pharmacol. & Exper. Therap. **1**: 233, 1909.
4. Kolmer, John A., and Lucke, Baldwin: A Study of the Histologic Changes Produced Experimentally in Rabbits by Arsphenamin; p. 515.
5. Zimmern: Dermat. Wchnschr., 1920, No. 5, p. 78.
6. Widal, F.; Abrami, P., and Iancovesco, N.: L'épreuve de hémoclasie digestive dans l'étude de l'insuffisance hépatique, Presse méd. **28**: 893 (Dec. 11) 1920.

latent syphilis, parasyphilis, etc., that is, chronic syphilitic patients) will not. As a certain number of these chronic syphilitic patients remained Wassermann fast or repeatedly relapsed serologically, no better opportunity could have been afforded us for the study of at least one, and probably the most important, phase of our problem, since these patients had been under extremely prolonged colloido-arsenical treatment. The amount of drug administered to the patients selected for a part of this study varied from 50 to 75 gm. (from seventy to one hundred and more intravenous injections, in most of which the single dose was 0.9 gm.). Regarding this phase of the problem—the effects of prolonged arsenobenzene treatment on the liver—it may be said by way of constructive criticism that there was no knowledge of the functional capacity of that particular liver before the institution of arsphenamin or neo-arsphenamin treatment. However, one would have to concede that, should most of these patients show a normal dye output, it would indicate that there was either no liver dysfunction at any time or, if there had been, it was not permanent. If, on the other hand, the majority showed retention, then liver dysfunction was present before treatment, or developed as a result of treatment. This possibility could be almost entirely eliminated if a study of a group of syphilitic patients before and after one or more intravenous injections failed to develop liver dysfunction, and if the majority of these long treated cases showed no liver dysfunction, which, as a matter of fact, did occur.

OBJECTS OF STUDY

As based on the phenoltetrachlorphthalein liver test, the objects of this study were to find answers to these questions:

1. Does one or several doses of neo-arsphenamin cause liver dysfunction?

2. Does the prolonged use of arsphenamin or neo-arsphenamin with or without mercurial injections cause functional liver disability?

3. Is the toxic jaundice, occasionally developing during the course of treatment with these drugs, followed by permanent liver dysfunction?

4. Do patients presenting other symptoms of intolerance (vomiting, diarrhea, tingling extremities, itching, cutaneous eruptions and nitritoid crises) have liver dysfunction either before treatment or as a result of treatment?

RESULTS OF TESTS, AND COMMENTS

In all, eighty-six patients were studied. Table 1 gives the results in skin diseases originally taken as controls. One patient with dermatitis herpetiformis, and three patients with psoriasis showed impairment of liver function. The findings in psoriasis led to further investigation on ten other patients with psoriasis. We are not of the opinion that there is ordinarily a liver dysfunction in psoriasis or dermatitis herpetiformis. The high totals in these may be explained by the fact that hepatic alterations were really present, of arsenical origin, since it is definitely known that the patient with dermatitis herpetiformis had received large amounts of sodium cacodylate intravenously over a period of one and one-half years, and that one patient with psoriasis admitted taking arsenic in the form of potassium arsenite solution for considerable stretches over a period of years.

One patient (Case 2) was purposely given 50 mg. of dye above the regular dosage, with the idea of determining whether or not more dye could be given to normal persons without showing retention. The liver of this patient excreted all but 1 per cent. of the dye within the hour. It is interesting to note that the liver function, as based on this test in one patient with xanthoma tuberosum, was normal.

TABLE 1.—*Liver Function Test in Skin Diseases*

Patient	Diagnosis	Age	Percentage Dye in Serum 15 Min.	1 Hour	2 Hours
1	Lupus vulgaris	18	5	1	0
2	Eczema	41	6	1	0
3	Acne	17	5	2	0
4	Recurrent eczema	44	5-7	2	0
5	Acne	21	5	1	0
6	Hydroa vacciniforme	9	5	1	0
7	Eczema	23	5	1	0
8	Acne	19	5	0	0
9	Erythema multiforme	27	5	2	0
10	Sclerodactylia	41	2-3	0	0
11	Xanthoma tuberosum	39	5	1	0
12	Dermatitis herpetiformis	27	7-10	5	0
13	Psoriasis	23	10	5	2
14	Psoriasis	28	7-10	3	2
15	Psoriasis	39	7-10	3	0
16	Psoriasis	36	5-7	2	0
17	Psoriasis	35	5	1	0
18	Psoriasis	29	5	0	0
19	Psoriasis	31	5	0	0
20	Psoriasis	32	3	0	0
21	Psoriasis	36	3	0	0
22	Psoriasis	28	5	0	0
23	Psoriasis	27	7	2	0
24	Psoriasis	32	7	2	0
25	Psoriasis	29	5	0	0
26	Infectious eczematoid dermatitis	23	3-5	0	0
27	Eczema	25	10	2	0
28	Acne	33	5	0	0

An examination of Table 2 shows that from one to fifteen therapeutic (0.9 gm.) injections of neo-arsphenamin causes no liver dysfunction as based on this test. On those syphilitic patients who were given one injection of neo-arsphenamin, the tests were performed one, two, three and four days later in order to determine temporary alterations in function. The slight structural alterations described by Kolmer and Lucke in their experimental studies with therapeutic doses, if applicable to the human being, certainly do not interfere with the uniform elimination of phenoltetrachlorphthalein. These tests controvert the findings of Widal and his collaborators with their proteopexic tests. However, it must be borne in mind that, although the excretory function, on which the test studies here are based, is not in most cases (eight out of nine) apparently altered, it is possible that the proteolytic function, on which their test depends, is disturbed.

TABLE 2.—*Test on Syphilitic Patients Before and After from One to Fifteen Neo-Arsphenamin Injections*

		Percentage Dye in Serum: Before				After		
Patient	Dose	15 Min.	1 Hr.	2 Hrs.	Dose	15 Min.	1 Hr.	2 Hrs.
29	0	5	1	0	1	5	1	0
30	0	7	2	0	1	7	2	0
31	0	5	0	0	1	5	1	0
32	0	7	1	0	1	5	2	0
33	0	5	0	0	1	5	1	0
34	0	3-5	2	0	1	5	0	0
35	0	7	2	0	1	8	2	0
36	0	7	2	0	1	7	1	0
37	0	5	1-2	0	1	10	3	0
38	..	..	..	..	14	5	0	0
39	..	..	..	..	8	10	3	0
40	..	..	..	..	4	10	3	0
41	..	..	..	..	7	3	0	0
42	..	..	..	..	5	9	3	0
43	..	..	..	..	6	5	0	0
44	..	..	..	..	12	7	0	0
45	..	..	..	..	1	7	1	0

In Table 3, consisting of patients who had received from fifteen to forty-five injections, of neo-

arsphenamin, only one showed liver dysfunction. In this patient, liver dysfunction may have been present before treatment was instituted, as there was a history of "yellow janders" at the age of 9 years.

TABLE 3.—*Syphilitic Patients with Less than Forty-Five Injections*

Patient	Dose	Percentage Dye in Serum		
		15 Min.	1 Hour	2 Hours
46	24	7	2	0
47	15	5	1	0
48	43	5-7	1-2	0
49	31	4	5	1
50	42	3-5	0	0
51	15	7	1	0
52	26	7	1	0
53	39	7	2	0

Patients with acute reactions (Table 4) showed no liver dysfunction.

TABLE 4.—*Syphilitic Patients with Acute Reactions*

Patient	Age	Dose	Percentage Dye in Serum		
			15 Min.	1 Hour	2 Hours
54	38	15	7	1	0
55	32	20	5-7	3	0
56	37	21	5	0	0
57	28	42	3-5	0	0
58	23	8	3	0	0
59	32	26	7	1	0
60	64	4	5	2	0
61	31	7	3	0	0
62	35	6	7-10	2	0

The question of permanent damage in toxic icterus (Table 5) is important. If tolerated doses cause a certain amount of structural hepatic alteration with no dysfunction, as seen in Tables 2 and 3, then doses that are not tolerated (as evidenced by icterus) may not show complete recovery, as our tests prove. All of these patients had had icterus from one or two years before the test was performed. My clinical diagnosis at the time Patients 68, 69 and 70 had icterus was that they were infectious (there was a Herxheimer reaction in two and a catarrhal condition in the third), whereas the other five had been considered toxic (Patients 63 and 65 because of an associated widespread dermatitis). It would appear, therefore, that patients who develop toxic icterus from arsenobenzene therapy are left with a mild or moderate liver dysfunction.

TABLE 5.—*Syphilitic Patients Who Had Had Icterus*

Patient	Age	Dose	Percentage Dye in Serum		
			15 Min.	1 Hour	2 Hours
63	27	6	8	4	0
64	38	13	10	3-5	0
65	40	42	12	3	2
66	31	33	10	3	0
67	29	17	10	3-5	0
68	15	12	7	2	0
69	39	4	5	1	0
70	28	2	5	0	0

Patients 71, 72 and 73 had a widespread dermatitis; Patient 72 had an associated icterus; Patient 74 had a mild dermatitis. The first three patients had dermatitis one or two years before the test was performed. In 50 per cent. of this small group, permanent liver dysfunction was demonstrated. The fourth patient was particularly instructive. She had given a history of having developed a rash in another city on her fifth injection. On her sixth injection, given by us, she developed a mild deramatitis shortly after which the test was performed. She illustrated the value of having the test performed on patients showing precocious signs of intolerance to the arsenobenzenes.

TABLE 6.—*Syphilitic Patients Who Had Had Dermatitis*

Patient	Age	Dose	Percentage Dye in Serum		
			15 Min.	1 Hour	2 Hours
71	30	9	9	3	0
72	27	6	8	4	0
73	26	7	12	2	0
74	32	5	13	10	5

Of twelve patients (Table 7) who had received from forty-five to one hundred and twenty-four injections (arsphenamin and neo-arsphenamin), seven showed no liver dysfunction, two showed slight impairment, and three showed moderate impairment. It is interesting to note that the patients who had received the highest number of injections (77, 88, 100, 108 and 124) showed absence of liver dysfunction. How explain the apparent harmlessness of the drugs for the livers of these patients? The injections were given in full therapeutic dosage (for most of the time twice weekly, and 0.9 gm. each time). The only possible explanations are (*a*) compensatory hyperfunction of the liver if such occurs, or (*b*) an absence of the factors necessary to the arsenobenzenes for the production of a toxic hepatitis. In any case, it appears that over 50 per cent. of syphilitic patients who have undergone a prolonged arsenobenzene therapy show no liver functional damage. An interesting fact worth noting was the absence of any or but slight impairment in two young congenital syphilitic patients.

TABLE 7.—*Syphilitic Patients with from Forty-Five to One Hundred and Twenty-Four Injections*

Patient	Dose	Percentage Dye in Serum		
		15 Min.	1 Hour	2 Hours
75	124	7	1	0
76	108	7	1	0
77	100	5-7	1	0
78	88	5	0	0
79	77	5	1	0
80	70	8	3	0
81	58	5	0	0
82	63	10	3-5	1
83	47	10	3-5	1
84	52	5-7	1	0
85	48	5-7	1	0
86	49	10	3	0

CONCLUSIONS

1. Liver function, based on the phenoltetrachlorphthalein test, was but slightly or not at all (70 per cent.) altered in patients who received from one to forty-five intravenous injections of the arsenobenzenes.

2. Seventy-five per cent. of the patients who had received from forty-five to 124 intravenous injections of arsphenamin or neo-arsphenamin or both showed no liver dysfunction.

3. Patients who develop a toxic icterus are apt to suffer later from permanent liver dysfunction. When the acute phenomena have disappeared, the permanent liver dysfunction is not associated with apparent clinical disturbances.

4. Although liver dysfunction could not be demonstrated in patients with acute reactions following the administration of the arsenobenzenes, yet the phenoltetrachlorphthalein liver test ought to be performed on those syphilitic patients showing some forms of intolerance to the arsenobenzenes (itching, tingling in the extremities and mild dermatitis, in particular). Icterus is too late a sign of toxicity.

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THROMBOSIS OF THE CENTRAL RETINAL VEIN AND ITS BRANCHES *

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In the opening paragraph of a paper on thrombosis of the retinal veins after influenza, Dr. Edward Jackson [1] says: "The clinical course and exact pathological changes of obstruction of the retinal vessels are still so imperfectly known, that we are justified in recording additional cases that seem to be of this character."

It would appear, then, that bringing this subject up occasionally for discussion should be helpful. My principal purpose, however, in the present communication is twofold: (1) to place on record a case of thrombosis of the central retinal vein, which, from a study of the literature, appears to be unique in many ways, and (2) to urge that all such cases be carefully investigated and thoroughly treated, even if some of the authorities consider that treatment accomplishes little.

A sudden obstruction, or a slowly developing obstruction to the flow of blood in the central retinal vein will, when complete, or nearly so, cause a serious disturbance to the vision, and the fundus will reveal the changes typical of that condition usually diagnosed as thrombosis of the central vein. Jackson [1] has again called attention to the fact that the lumen of the vein does not have to be completely obliterated to give the full complex fundus picture. From the literature, it would appear that the term thrombosis of the central retinal vein had come to stay even though the majority of cases so diagnosed from the fundus evidences of obstruction do not have thrombi, according to the pathologists.

EARLY LITERATURE

The first accurate description of the ophthalmoscopic picture of obstruction of the central retinal vein was from Liebreich [2] in 1855. In 1846, von Seidel and Kauka,[3] and, in 1851, Blodig [4] had called attention to the possible occurrence of monocular blindness among patients with cardiac and vessel disease. In 1856, von Graefe [5] and Jaeger [6] reported phases of this condition. In 1878, Michel [7] described the anatomic findings in a case of thrombosis of the central retinal vein which had developed suddenly, vision being reduced to light perception. He described three degrees of obstruction. The first is complete. "The disk and the surrounding retina are suffused with blood, and the outlines of the disk cannot be seen. Outside of the suffused zone there are numerous small hemorrhages varying in size and shape, some being bright red and others dark red in tint. The arteries are thin; the veins are enormously dilated and very tortuous, and the currents are dark black-red in color. The blood column in the veins sometimes appears interrupted. The macula shows a yellowish-gray discoloration, with hemorrhages." In the second, the obstruction is only partial; the hemorrhages are less abundant, and the vision is less affected. The fuller picture may be approached as the obstruction becomes more complete. In the third, in which the obstruction is still less, the hemorrhages are still less abundant, but the veins are much larger than normal.

PATHOLOGY

It is evident, therefore, that when the obstruction is practically complete, a striking fundus picture is presented, the most prominent features being the engorged veins, the swollen disk and retina and the abundant hemorrhages. The retinal veins are much darker (many authors use the term black-red to describe this darker shade), very tortuous and nearly double the normal size, and may show irregular swellings and contractions, even approaching the condition known as beading. A raised portion of a swollen vein may appear lying above the edematous retina, while, a little more distally, it disappears beneath the swollen tissues so that the tortuous veins appear to thrust in and out of the retina in their course, like a serpent swimming over waves. The arteries are smaller than normal and are often so buried beneath the swollen retina as to appear only in scattered areas some way from the disk. They not infrequently show signs of arteriosclerosis. The disk and retina are so involved with edematous changes that the former is usually buried and invisible, its location being made known by the converging vessels. Occasionally, whitish areas of exudate or degeneration are seen between the hemorrhages, or in the macula region.

The abundant retinal hemorrhages form the most impressive portion of the picture. They are scattered throughout the fundus, being larger near the disk. The ones in the deep nerve fiber layers are more rounded and darker, while the more superficial ones are brighter red and more flame shaped. Those about the macula are often the darkest and most discrete. On and around the swollen disk the suffusion of blood may be so extreme as to be described as sheetlike. Frequently, after the obstruction has been unrelieved for some time, small, streak shaped bright red superficial hemorrhages will appear in numbers radiating from the center of the swollen disk out on to the surrounding retina. It is on account of the abundant hemorrhages in the swollen retina that this manifestation of obstruction of the central retinal vein is often diagnosed as hemorrhagic retinitis.

We must remember in this connection that retinal hemorrhages may be due wholly to arterial disease, but such may easily be recognized as not due to venous obstruction by the freedom of the fundus from engorged veins and by the lack of retinal edema; and this should not be called hemorrhagic retinitis. These two causes of retinal hemorrhages, however, may be, and often are, combined, but the conditions due to arterial disease are mostly hidden by the retinal manifestations of venous obstruction (Case 3). Mackenzie [8] describes a case of combined arterial and venous obstruction and asserts that such coexisting obstructions are found more often in the branches than in the main trunks. The striking picture of completed obstruction outlined above grades down as the obstruction is less complete, or less sudden. The swelling of the disk and retina is the least marked in cases of partial obstruction, while the size and number of the hemorrhages are somewhat reduced. The extent of engorgement and tortuosity of the veins is but little,

* Read before the Section on Ophthalmology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appearance in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

1. Jackson, Edward: Am. J. Ophth. 3: 855 (Dec.) 1920.
2. Liebreich: Arch. f. Augenh. 1, 1855.
3. Von Seidel and Kauka: Med. Jahrb. d. K.-K. osterreich. States, 1846.
4. Blodig: Ztschr. f. d. ges. Wundarzte, 1851.
5. Von Graefe: Arch. f. Augenh. 11, 1856.
6. Jaeger: Beitr. z. path. Augenh., 1856.
7. Michel: Arch. f. Augenh. 24, 1878.
8. Mackenzie: Tr. Am. Acad. Ophth. Oto-Laryngol., 1916.

if any, less, though they are much less hidden. In the mildest cases, the disk can often be clearly seen, and also the vessels throughout most of their course, while the hemorrhages may be few in number, with often more visible exudate.

W. R. Parker,[9] in describing a slowly progressive case that came under his care, details the fundus picture thus: "Left eye, disk edematous, blurred and slightly swollen. Veins markedly engorged, irregularly distended, most marked in the superior temporal portion. Retina mottled throughout by diffuse, striated and radiating hemorrhages (nerve fiber layer), the whole retina edematous, in places completely obscuring the veins. Center of the fovea yellowish, hemorrhages darker in color radiate from the center of the fovea." In spite of the marked disturbance of the retina described in this case, the vision was 5/20, and this would seem to indicate that the obstruction was not complete.

Parsons [10] reported a case of partial thrombosis of the central retinal vein, with the following ophthalmoscopic picture: "There was at first a very white fundus, with a hazy, slightly swollen disk, arteries concealed, and intensely engorged and convoluted retinal veins, with a few flame-shaped hemorrhages. Eleven days later the fundus reflex was red, the arteries clearly visible, though smaller than normal, and the veins less engorged. At the end of six weeks all hemorrhages and white patches had disappeared and vision was 6/18."

If, perchance, by reason of treatment, or from the natural processes, vision is restored, the case was probably one of obstruction, without actual formation of thrombi. In fact, it is doubtful if there is, early, much true thrombosis; so, in the first onset of such a condition, a diagnosis of obstruction is probably more often correct, though custom sanctions the diagnosis of thrombosis.

If one of the primary branches is obstructed, the fundus picture is confined to that half of the retina which the affected branch drains, and the loss of vision is confined largely to the corresponding field. If a second or tertiary branch is obstructed, the retinal apoplexies are confined to the portions of retina drained, and the portion of the visual field lost is much smaller. It must be borne in mind in this connection that usually the loss in central visual acuity from the general retinal disturbance which occurs, even when a secondary or tertiary branch is involved by the sudden obstruction, is greater than the location of the retinal hemorrhages would indicate. This is especially true if the secondary or tertiary branches are the temporal ones.

The history and the ophthalmoscopic appearances in many cases would indicate that the venous obstruction was slow in developing. I have observed such cases, a partial obstruction of the vein being evident from the history and fundus changes; but later a complete obstruction has been superimposed and the disturbance of vision and fundus changes had become much more marked (Case 3). I have also seen one case in which the lower branch of the central vein has been obstructed, and later the patient has come in with evidences of obstruction in the upper branch (Case 9).

ETIOLOGY

It is frequently difficult to ascertain the primary cause of a venous obstruction, but in the majority of cases, particularly when one of the branches is affected, the first compression of the vein has been due to an overlying, thickened artery or a thickened artery which winds around the vein. When the central vein is obstructed, this obstruction usually occurs at the lamina cribrosa. Why an obstruction sufficiently complete to cause the picture of thrombosis is not more common, when we consider how frequently a distally dilated vein is seen in cases of arteriosclerosis, is hard to say, and it must be that there are some added influences, such as an endophlebitis at the point where the vein is pressed on, with the final formation of a thrombus, which fully blocks the lumen of the vessel and produces the picture of venous thrombosis in the portion of the vein distal to the point of arterial compression. It is probably true, also, that altered blood conditions have something to do with the formation of the thrombus within the diseased vein.

Taking it all together, we are justified in concluding that the compression of the central vein in the optic nerve by a thickened artery, or the compression of one of the branches, also by thickened vessels, is the most frequent primary cause of the condition under discussion. We have some insight into the cause of the arteriosclerosis but less knowledge of the blood conditions which predispose to endophlebitis and the formation of thrombi. Many of my cases of thrombosis of the central vein and its branches have been exhaustively studied as to general physical condition and body metabolism, and diligent search has been made for focal infections, such as those occurring around the teeth, in the tonsils, or in the nasal accessory sinuses. So far these investigations have yielded no conclusive results.

From his investigations, Verhoeff [15] concludes that, in most cases, the closure of the vein is due to a proliferating endophlebitis, unless there is actually a septic process to cause the thrombosis. (I have not included in my cases any of those in which a septic thrombosis of the cavernous sinus has extended forward to the ophthalmic vein and central retinal vein.)

Staehli [16] made microscopic examinations of three eyes removed on account of hemorrhagic glaucoma. In all three he found endarteritis and phlebitis of the central vessels. Ischreyt [17] also examined an eye enucleated for hemorrhagic glaucoma and found an obliterating thrombosis of the central vein.

Coats [18] made a study of the pathologic anatomy of four cases of obstruction of the retinal veins. In one case the obstruction proved to be due to thrombosis, while another showed simply enormous thickening of the walls of the vein. The other two, which had suffered from secondary glaucoma, showed the central veins to be completely obliterated by endophlebitis. Coats, therefore, concludes that angiosclerosis may be given first place in the causes of thrombosis of the central retinal vein.

Harms [19] gives these causative conditions for obstruction of the central vein: 1. Thrombosis from enfeeblement of the circulation. 2. Thrombosis in which the caliber of the vein is normal but the vein is narrowed at some other point. 3. Chronic inflammation of the middle or inner coats of the vein. 4. Thrombosis consecutive to endophlebitis. Harms

9. Parker, W. R.: J. Michigan M. S. **13.**
10. Parsons: Tr. Ophth. Soc. U. K. **27.**

15. Verhoeff: Ophth. Rev., December, 1906.
16. Staehli: Arch. f. Augenh.
17. Ischreyt: Arch. f. Augenh. **70.**
18. Coats: Roy. Lond. Ophth. Hosp. Rep. **16.**
19. Harms: Klin. Monatsbl. f. Augenh., February, 1905; Arch. f. Opth. (Graefe's) **61.**

has also called attention to the fact that angiosclerosis in one central vessel is usually accompanied by angiosclerosis of the other central vessel so that the ophthalmoscopic picture is frequently a combination one produced by disease of both the artery and vein. Hence it is common to find, accompanying the picture of obstruction of the central vein, more or less exudate and hemorrhages due to disease of the retinal arteries (Case 3).

Parker [20] reports a case of quinin amaurosis in a patient, aged 43, who, during twelve hours, took 240 grains (16 gm.) of quinin sulphate. The right eye showed a thrombosis of the inferior branch of the retinal vein, and the left eye showed a thrombosis in the superior branch of the retinal vein. Todd [21] examined an eye enucleated two years after a thrombosis of the central vein and found the central vessels showing calcareous degeneration. Dor,[22] in a case diagnosed as thrombosis of the central vein, found focal infections of the roots of a number of teeth, and considers this a probable cause of the condition. Koeppe,[23] in a paper on the histologic behavior of the fundus oculi intra vitam in thrombosis of the central vein and in choked disk, says that microscopic observation of the fundus oculi may show the individual characteristic changes due to thrombosis of the central vein and to choked disk because, according to Schieck, in both diseases passive congestion extends from the papilla. In thrombosis of the central vein, the interfascicular lymph space system appears infiltrated with blood; in choked disk, it appears infiltrated with lymph. In both diseases, retinal hemorrhages cause wrinkling and knotting of the limitans interna.

Von Hippel [24] made transverse sections of the optic nerve in nine cases of glaucoma after thrombosis of the central vein. In one case, all sections showed a normal lumen of the artery. In the remaining cases, both central vessels were more or less closed by cell proliferations. In a few cases, the vein occasionally completely disappeared, and its former course could be traced only by examining the sections in succession. Recent primary thrombosis, which could be anatomically absolutely diagnosed as such, was never observed. The spot of occlusion was always typical and usually localized to from 0.5 to 1 cm. in length. In two cases, Hippel observed marked small cell infiltration of the venous wall.

Junius [25] described a case diagnosed as thrombosis of the central vein occurring during an attack of Flexner's dysentery and malaria. He also states that thrombosis of the central vein has never been reported as definitely due to either of these conditions.

The American Encyclopedia of Ophthalmology [26] states that, according to a review of the subject from observations of thirty-six cases by George Coats, the obstructions in the central vein are almost always caused by true thrombosis. This does not agree in any way with the anatomic observations of Verhoeff, von Hippel and others. The same volume quotes Reber as reporting a case of thrombosis of the central vein that he regarded as secondary to nasal disturbance. Following rhinologic treatment, vision was restored to 20/30.

20. Parker, F. J.: Arch. Ophth., July, 1906.
21. Todd: Ophth. Rec. **20**: 74.
22. Dor, L.: Clin. Ophth. **32**: 531-532, 1917-1918.
23. Koeppe, L.: Arch. f. Ophth. (Graefe's) **97**: 346, 1918.
24. Von Hippel: Deutsch. med. Wchnschr. **48**, July 1, 1920.
25. Junius: Ztschr. f. Augenh. **42**: 122-125, 1919.
26. American Encyclopedia of Ophthalmology **16**.

In any case, if the obstruction of a central retinal vein becomes complete and remains so, the vision is wholly lost and the eye is prone to develop secondary glaucoma, for which enucleation is usually the only treatment.

Coats,[18] in speaking of the association of glaucoma with thrombosis of the central vein, offers the following explanation as having the least objections: "In consequence of the severe congestion and hemorrhagic suffusion of the retina, the character of the lymph circulating in the vitreous is altered. It becomes more abundant and also more colloidal and is, therefore, less easily drained at the angle of the anterior chamber."

Verhoeff [15] found evidence of glaucoma in all but one of the cases he examined microscopically, and from this and the added most important fact that, in such cases, the condition is monocular, rightly concludes that the glaucoma is a result of the venous obstruction, and ascribes this directly to an excess of albumin in the vitreous. This excess he demonstrated in one case.

Meyer [28] reported three cases of thrombosis of the central retinal vein ending in glaucoma.

Mayer [29] examined anatomically three cases of hemorrhagic retinitis. In all, he found a thrombotic obstruction of the central vein or of its branches, and in all the angle of the anterior chamber was blocked. There was a glaucomatous cupping of the nerve head in only one case. Williamson [30] studied microscopically two glaucomatous eyes. In each there was a thrombosis of the central vein. In one of these there was albumin in the angles of the anterior chamber, and in this case the excessive edema produced by the venous stasis had produced a hole in the macula.

Mayou [31] has called attention to the presence of new formed vessels on the iris in the acute glaucoma secondary to thrombosis of the central vein. He thinks that such new formed vessels are pathognomonic of the glaucoma resulting from thrombosis of the central vein. The importance that he attaches to this condition lies in the fact that in many cases of acute glaucoma the previous history is not sufficient to make a differential diagnosis between simple acute glaucoma and glaucoma secondary to thrombosis of the retinal vein, it being generally known that, in the type of acute glaucoma under discussion, operative procedures are not followed by good results, except in rare cases. Mayou emphasizes the fact that the new vessels on the iris should be ruled out only after an examination with the loupe or corneal microscope.

In cases of chronic glaucoma of long standing, obstruction of the veins may be produced by the increased intra-ocular pressure and by the pressure on the veins where they pass over the edge of the deep cup. In such a case, the pressure, together with some altered blood condition or altered condition of the vessel walls, may be sufficient to cause thrombosis and a hemorrhagic retinitis, which may later result in an inflammatory glaucoma, requiring enucleation. If such a case is not seen before the acute glaucoma appears, it would probably be classed as one in which thrombosis of the veins caused the glaucoma, rather than being correctly classified as a case of chronic glaucoma causing a venous thrombosis, this in turn causing the hemorrhagic retinitis and the inflammatory condition.

28. Meyer: Wien. klin. Rundschau, No. 20.
29. Mayer: Klin. Monatsbl. f. Augenh., March, 1910.
30. Williamson: Brit. J. Ophth., February, 1922.
31. Mayou: Brit. J. Ophth. 2.

On seeing for the first time a case of absolute glaucoma that does not yield in any way to myotics, there should be suspicion of its being a case of hemorrhagic glaucoma. If new formed vessels are seen on the iris, the suspicion should be much greater, and if a history of sudden loss of vision in the eye several weeks previously, without pain or inflammation, is obtained a diagnosis of hemorrhagic glaucoma following a thrombosis of the central vein may safely be made and the eye condemned at once, even if the fundus cannot be seen. An absence of signs of glaucoma in the opposite eye is also strong confirmatory evidence of its secondary nature.

Ischreyt has called attention to the possibility of the glaucoma being primary. Such cases must be extremely rare, when one considers the almost universal opinion that hemorrhagic glaucoma is a monocular disease.

Verhoeff,[12] in a classic paper on the "Effect of Chronic Glaucoma on the Central Retinal Vessels," has conclusively shown, from a pathologic examination of thirty-nine cases of secondary glaucoma, that long standing increased intra-ocular pressure, with marked cupping of the disk, will eventually produce an obliterating endovasculitis of both central vessels, especially the vein, this obliterating disease coming more rapidly in the old than in the young, but being present even in extreme youth. For a careful study of the various microscopic changes, the reader is referred to Dr. Verhoeff's article. It should be especially noted that among his cases in which the central vein was largely obliterated only three showed any retinal hemorrhages, and in none of these were the fundus changes wholly characteristic of the hemorrhagic retinitis of central vein thrombosis, and it should also be noted that these cases were of secondary glaucoma. The observation is still correct that but few cases of eyes blinded by chronic glaucoma, even of many years' standing, result in thrombosis of the central vein and hemorrhagic retinitis.

Verhoeff seems to have disposed of the theory of the canalization of thrombi.

PROGNOSIS

The prognosis, as far as the eye is concerned, depends largely on the stage at which the patient comes for treatment. If the case is seen early enough, it is possible, by proper treatment, to bring about a considerable measure of restoration of vision, even in some of the cases that appear hopeless from the clinical picture. This statement is amply verified by the results in Cases 1 and 2. If, however, the obstruction has been present more than a few days, and there has been no return of circulation, there is little hope of restoring the vision, and in many cases a secondary glaucoma develops, which usually demands a prompt enucleation.

De Schweinitz[14] says, "If the thrombosis is in the central vein, hope of restoration of vision practically must be abandoned; in obstruction of a branch the prognosis is more favorable."

Some authors have tried to prove that the occurrence of the thrombosis of the central vein, or of one of its branches, has some value as a prognostic indication of the general length of life of the patient affected. I have not found this true, and I do not think that the retinal apoplexy in any way portends early death from circulatory causes. One cannot prognosticate except in a general way in a patient with arteriosclerosis. Neither can one prognosticate from an endophlebitis with thrombosis.

In the opinion of Coats,[18] thrombosis of the central vein affords very little information with regard to the prognosis for life.

Geis,[32] in a paper on retinal hemorrhagic and vascular disease as related to the condition of cerebral vessels, reported that he investigated for five years, or until death, the clinical history in a number of cases of venous thrombosis, and found that in from 40 to 50 per cent. this was a forerunner of vascular sclerosis of the brain, which, in some cases, did not become evident until after nine to twelve years.

TREATMENT

It is advisable to have such cases under the care of a general physician, who will see that the bodily functions are as nearly normal as possible, particularly in view of the fact that there is so commonly an accompanying general angiosclerosis. In considering the treatment of the condition itself, there are two objectives to be sought: (1) The restoration of vision as far as possible or the prevention of an increase in loss of vision, and (2) the prevention of a subsequent glaucoma. As pointed out under prognosis, the treatment, to be of any value toward restoring vision, must be early, and any measure which an ophthalmic surgeon feels may help to restore circulation should be adopted. I have usually tried fairly frequent inhalations of amyl nitrite and the giving of some form of nitrite internally to keep up the effect of the inhalations. The withdrawal of fluid from the circulation by pilocarpin sweats and mild purges has also been adopted in suitable cases. For long continued treatment, some of the iodin preparations have seemed to be useful. I have been in the habit of keeping such patients on small doses of syrup of hydriodic acid over long periods. The tension should be taken frequently, and if that in the afflicted eye is higher than that in the opposite, myotics should be used. It is my custom to use myotics in such cases as a routine measure, even if increased tension is not present.

De Schweinitz[14] says that treatment "depends upon the general condition, and the patients with central vein thrombosis should be thoroughly studied from all standpoints and treatment directed according to the results of the examination. Other things being equal, iodids and syrup of hydriodic acid may be administered. Diaphoresis may be tried; mydriatics should not be used lest they cause glaucoma; indeed, it is proper to use miotics as part of the routine treatment."

REPORT OF CASES

The most interesting clinical history that I have to report in this connection, especially as it appeared to be definitely a case of phlebitis with thrombosis, is Case 1.

CASE 1.—*History.*—Mr. W. C. R., an Episcopal rector, aged 37, who came to me in October, 1909, gave a history of headache and pain around the eyes, on use. A moderate amount of hyperopic astigmatism, with nearly vertical axes, was found, and with correcting lenses he had a vision of 20/20 in both eyes. He gave a negative family history. The previous history showed many attacks of tonsillitis, which, from time to time, interfered with his school career. He had never been physically robust, though he had accomplished an amazing amount of work as a student and as a young curate.

Examination.—He next came to me, Jan. 13, 1910, with a complaint that for a week his left eye had been inflamed

32. Geis: Klin. Monatsbl. f. Augenh., October, 1910.

and somewhat painful, with vision disturbed. Examination revealed an acute iritis with a few adhesions down and in, and a fine film of exudate over the capsule of the lens. This iritis yielded quickly to the usual treatment, but he was obliged to continue with the use of atropin until the following July. This was due to the fact that he had three slight relapses during that time. The regulation examinations were made to determine the causative factor, but nothing was found.

Course and Treatment.—In September, October and December of the same year, he had slight relapses of the iritis. In March, 1910, he had an attack of phlebitis in the left leg which, later, extended to the veins of the right leg, so that he was in the hospital for two and a half months. During the next two years, he had repeated attacks of phlebitis in the lower extremities, and iritis in the left eye.

Jan. 16, 1913, he came to me with the first attack of iritis in the right eye, it being a type of iritis similar to that previously observed from time to time in the left eye. This attack lasted for one month. There was a slight relapse of the iritis in this eye two months later, and, at the same time, the left eye was badly affected with an iritis lasting for three weeks, at which time the patient also had a severe attack of phlebitis in the left leg and ankle, and he became very deaf in the right ear.

In July, 1913, his right leg became much swollen and painful from a return of the old phlebitis. In August, the right arm became swollen and painful from phlebitis with thrombus formation. During all this time, the patient was under treatment by his regular physician for his general condition and under my treatment for recurrent attacks of iritis, first in the one eye and then in the other.

Jan. 28, 1914, one year after iritis first appeared in the right eye, the vision in this eye became suddenly blurred. He ascribed this to an attack of iritis and carried out his usual treatment for this condition. It continued to get worse until three days later, when, during my illness, he saw Dr. Lancaster and Dr. Verhoeff, who pronounced the condition one of thrombosis of the central vein in the right eye. The patient spent the next five days at the Peter Bent Brigham Hospital undergoing examinations and tests made in an effort to find some focus of infection, but without result.

Feb. 12, fifteen days after the onset of the thrombosis of the central vein, the right eye began to show signs of glaucoma. Pilocarpin and physostigmin immediately relieved the glaucomatous symptoms, and the patient went to the Baptist Hospital, where he stayed for three months. At this time, a streptococcus culture was obtained from his blood, and his tonsils were removed. The main reason for his long stay in the hospital was that the phlebitis in both legs had recurred.

This variable disturbance of vision in the left eye continued until August 12, when, following one of the spells of partial blindness, the vision in this eye failed to return and the patient came from his home in New Hampshire to Boston. On examination at this time, the vision was reduced to less than 20/200, and often objects seemed to disappear entirely. The fundus revealed a typical picture of thrombosis of the central vein, with hemorrhages scattered throughout all parts of the swollen retina. The veins, where seen, were double the normal size, and dark. The arteries, where seen, were small. There was some exudate around the disk, whose outlines could not be seen. The right eye, at this time, showed no perception of light whatever and was in a condition of subacute glaucoma, in spite of the use of pilocarpin. The patient was taken at once to a private hospital and, an hour later, vigorous treatment was instituted. Inhalations of amyl nitrite were given every four hours. Nitroglycerin was given internally. He was kept quiet in bed in a darkened room, and every other day was given a pilocarpin sweat. Twenty-four hours after he entered the hospital, he began to see things around the bed more clearly. Each day after that there was a decided improvement in vision, though the condition of the fundus remained about the same, with the addition that numerous exudates had formed along the veins, which were not quite so dark or so swollen.

August 17, his head was examined by roentgen ray, by Dr. Dodd, and it was found that the ethmoids and frontal sinuses were diseased.

August 28, Dr. Mosher operated on the sinuses and ethmoids.

September 1, vision had improved to 20/30, and the nerve head was less obscured.

September 15, the retinal hemorrhages had nearly disappeared, but the optic nerve was still swollen and the vision still 20/30.

In the fall of 1916, he had several attacks of mild iritis in the left eye and severe attacks of iritis in the right eye. Each attack of iritis in the right eye was accompanied by exudate in the anterior chamber. He also had very severe attacks of phlebitis in both lower extremities.

Operation.—As a result of repeated attacks of severe pain in the right eye, the patient submitted to enucleation, Nov. 10, 1916. Unfortunately, through a mistake on the part of a new nurse at the hospital, the enucleated eye was not saved for examination as had been ordered. The recovery from the enucleation was uneventful.

Further Course.—December 19, he had a severe attack of iritis in the left eye, the anterior chamber being entirely filled with gelatinous material. After two months' treatment, this iritis disappeared, leaving the pupil entirely clear. A portion of the hospital report reads: "The patient has been studied extensively while in the hospital, and the principal treatment has been a course of colon bacillus vaccine. This was made for him because it was found that his blood showed a higher agglutination than normal. He had frequent attacks of iritis while in the hospital. During his stay, he has had many slight rises in temperature, sometimes as high as to 102.6 F. No serious thromboses have occurred, however. Clinical pathology has been normal except for leukocytosis at the time of his thromboses. Blood cultures have been negative. Gastro-intestinal studies have been negative. No definite cause has been found for his thromboses. Discharge diagnosis—multiple thromboses."

Outcome.—Feb. 27, 1920, the vision in the left eye was 20/20+. On examination of the fundus, the outlines of the optic disk were seen, but there was a very fine cobwebby, white exudate over the disk, which followed along the primary and secondary branches of both the central vein and the central artery. The veins and arteries were of normal size and color but for the periarthritis and periphlebitis. The lower branch of the central vein had a beaded appearance, but evidently the blood was circulating. There were no hemorrhages. There was no disturbance in the field of vision, and the patient was able to use his eye several hours a day.

Considering the many attacks of general phlebitis and severe iritis, followed by thrombosis of the central vein in both eyes, with the loss of the right eye from the glaucoma secondary to this condition, the fact that at the present time this patient has a vision of 20/20+ in his remaining eye seems little short of miraculous, and is probably largely due to the fact that he has ever been willing to carry out any therapeutic measures which his physicians and oculists have advised and to spend quietly in bed all the time necessary for his treatment.

From the foregoing rather lengthy history it seems fairly evident that this patient (who had so many attacks of thrombophlebitis involving the veins of the extremities), had a condition of true phlebitis of the central vein and its branches in both eyes, with the formation of thrombi in the right eye that caused permanent obstruction and blindness, but with a resumption of circulation in the left eye, following the obstruction.

CASE 2.—*History.*—Mr. W. J. O'H., aged 53, a letter carrier having a very strenuous service, seen, Feb. 23, 1909, gave the following history as to his eyes: The right eye was lost three years previously as a result of a blow. Twenty-

four hours before consulting me, he noticed a disturbance in the vision of the left eye, which had gradually increased until it became so bad that he was unable to get around, and was brought to the office by his wife.

Examination.—In the left eye, vision was limited to perception of fingers at 3 feet. The fundus presented a picture of complete obstruction of the central vein, with many hemorrhages of large size near the disk, and smaller ones beyond. The veins were large, dark and tortuous, often buried. No exudates were seen. The retina was swollen and the disk blurred. The arteries were small and often buried in the swollen retina.

Treatment.—The patient was immediately placed on a couch in the office and was given the contents of a pearl of amyl nitrite for inhalation. The full physiologic effect of this was obtained and the eye massaged. The patient was given the pearls to use at home three times a day. Between times he was to take a one hundredth grain tablet of nitroglycerin four times a day, and gradually increasing doses of potassium iodid.

Two days later, he could count fingers at 8 feet, and the retinal veins were less swollen and less dark. At this time, he brought a report from his family physician that nothing abnormal could be found on physical examination.

The treatment was continued, and, March 4, 1909, the vision had risen to 20/100, and the retinal veins were only slightly enlarged. The hemorrhages were showing signs of absorption. The treatment was omitted at this time, except for the gradually increasing doses of potassium iodid.

Outcome.—April 8, the vision had risen to 20/70+. The fundus picture was much more nearly normal.

April 25, vision had risen to 20/30+; hemorrhages had entirely disappeared and the fundus was practically normal, except for some filmy exudate along the course of the retinal veins.

In these two cases, in which one eye had previously been lost, there was recovery from what appeared to be a hopeless visual disturbance due to an obstruction of the circulation in the central vein, and I cannot but suggest that the energetic treatment, with absolute rest in bed, had something to do with the favorable results. It is possible that rest in bed in a darkened room might have resulted equally well.

Mathewson[33] reported a case of a patient, 30 years of age, who had an intense thrombosis of the central vein with recovery of normal vision.

It is evident that patients with an only eye are much more likely to come for treatment early and thus have a better chance of recovery, and their condition would naturally lead the surgeon consulted to take every possible measure to help them.

Until seeing these two cases, I had always considered such a condition as incurable, but cannot continue to do so, in view of the foregoing experiences, and would like to urge my confrères to give such patients the benefit of the doubt, at least to the extent of keeping them quietly in bed for some time. Treatment should, however, be carried out just the same for patients having a good eye on the opposite side as for those whose only seeing eye is affected.

Case 3 is typical of those presenting both arterial and venous disease:

CASE 4.—*History.*—Dr. W., aged 57, first seen, Dec. 5, 1910, suddenly lost the sight of his left eye, one year previously. Dr. O. F. Wadsworth, who saw him pronounced the case one of thrombosis of the central vein, with complete obstruction. Shortly after this, he consulted Dr. Wadsworth for an attack of acute glaucoma in this eye, which yielded to myotics. He had several attacks of acute glaucoma during the year, but Dr. Wadsworth was able to ameliorate these.

For twenty-four hours previous to the time I first saw him, the patient had had an acute attack of glaucoma, unrelieved by myotics.

Operation.—In view of the history, immediate enucleation was advised and submitted to. A striking feature of the enucleation was the unusual amount of blood extravasated into the orbital tissues.[34]

Pathologic Findings (Dr. Verhoeff).—There was an advanced hemorrhagic glaucoma, with complete obstruction of the central retinal vein, and moderate endarteritis of the central artery. There was ectropion uveae. The filtration angle was open on one side where there was sclerosis of the ligamentum pectinatum. The retina was covered with hemorrhages. There was deep cupping of the optic disk.

CASE 5.—*History.*—Mr. J. V., aged 70, first seen, Oct. 2, 1912, in July, 1912, suddenly noticed that vision in the right eye was obscured. August 9, the eye became inflamed and painful, so, August 12, he consulted a physician, who made a diagnosis of glaucoma and gave him myotics. There was no improvement of vision and no diminution in the pain. The patient continued treatment until Oct. 2, 1921, when I saw him.

Examination and Treatment.—At this time, the eye was in a condition of absolute glaucoma, with no perception of light, and the cornea was steamy so no view of the fundus could be obtained. In view of the history and the fact that at no time had myotics been of any help, a tentative diagnosis was made of hemorrhagic glaucoma. Enucleation was advised, but not accepted. A solution of phenacain and ethylmorphin hydrochlorid was prescribed, to be dropped in the eye every three hours to relieve the pain.

The patient was using pilocarpin in the left eye with the idea that it was an ordinary case of glaucoma that was likely to appear in the left eye. As examination of the left eye showed the tension normal, and field and disk normal, pilocarpin was discontinued.

Operation.—While the pain was lessened by the treatment, the patient finally decided, October 22, to have the eye enucleated. No excessive hemorrhage followed enucleation, and healing was uneventful.

Pathologic Findings (Dr. Verhoeff).—There was advanced hemorrhagic glaucoma, and marked atrophy of the iris, with ectropion uveae. Early degeneration was present. Colloid bodies were noted in the retina. There was deep cupping of the optic disk. There was complete atrophy of the retina. The optic nerve was not cavernous. A complete obstruction of both central retinal vessels was due to endovasculitis.

CASE 6.—*History.*—Mr. J. W., aged 72, first seen in consultation in May, 1915, presented in the left eye a fundus picture of obstruction of the central retinal vein, with evidence of albuminuric retinitis in the macula region.

The right eye also showed signs of albuminuric retinitis, but no disturbance in the veins.

Shortly after I saw the patient, he developed an acute glaucoma, which was unrelieved by myotics, and the eye was removed to relieve the pain.

Pathologic Findings (Dr. Verhoeff).—Hemorrhagic glaucoma of recent origin was present. There was complete obstruction of the central vein. The central artery was practically normal. Papilledema was noted. There was albuminuric retinitis, and cavernous atrophy of the optic nerve. Numerous retinal hemorrhages and edema of the retina were evident. The ganglion cells were intact. There was senile atrophy of the ciliary body with hyaline degeneration of the ciliary processes, and beginning occlusion of the filtration angle. The vitreous humor was infiltrated with serum. Cysts of ciliary epithelium were noted. The anterior chamber was filled with serum and blood.

Cases 7 and 8 will be reported briefly as illustrative of those in which the obstruction of the vein occurred in one of the branches.

33. Mathewson: Arch. of Ophth., September, 1911.

34. Todd (Footnote 22) reported a case of great extravasation following the severing of the optic nerve and its vessels in enucleating an eye which had had a thrombosis of the central vein.

CASE 7.—Mrs. A. W., aged 67, seen, Feb. 26, 1919, when her vision was 20/15 in both eyes, with correcting lenses, came in, Nov. 20, 1922, with the complaint that vision in the left eye had suddenly become blurred. Vision, left, was 20/200. Examination of the fundus revealed a thrombosis of the temporal branch of the lower vein, the obstruction taking place about one disk diameter from the disk down and out. From this point, the vein was enlarged and tortuous, and hidden in spots by swollen retina. There were numerous hemorrhages scattered throughout the lower temporal quadrant of the eye, with edematous retina and a few spots of degeneration. The patient was given pilocarpin to drop into the eye twice a day, and sent to her family physician for general treatment.

Feb. 9, 1923, the vision of the left eye was 20/50. The condition of the lower temporal portion of the fundus was unchanged.

CASE 8.—Mrs. H. P. W., aged 46, seen first, March 4, 1909, at which time she was fitted for reading glasses, had a vision of 20/20 in both eyes with correcting lenses.

She was seen frequently after that for the usual increase in strength of lenses.

June 21, 1920, when aged 57, she complained that the vision in the left eye had been blurred for the last two weeks. Vision in the left eye was 20/100. Examination revealed a thrombosis of the upper branch of the central vein. The whole upper half of the retina was spattered with hemorrhages; the vein was double normal size down to the point where it crossed the edge of the disk. The patient was sent to her family physician for examination and proper treatment.

She was seen again, June 28 and July 28, and at neither time was there any change in the vision or the appearance of the fundus.

She came in, March 14, 1921, on account of the fact that the eye had become totally blind, except for perception of light. Examination of the eye revealed that the vitreous chamber was filled with blood clots.

May 15, 1922, the blood clots had almost entirely disappeared from the vitreous. The fundus could be clearly seen, showing the condition of the upper vein the same as before, but many of the hemorrhages had disappeared and there were areas of degeneration. Vision was 20/50; reduced to light perception in the entire lower field, however.

The patient appeared, March 24, with another hemorrhage into the vitreous, the vision being reduced to counting fingers at 1 foot. Ethylmorphin hydrochlorid was again ordered, to aid in the absorption of the hemorrhage, and syrup of hydriodic acid was given internally.

This is the only case I have ever seen in which hemorrhages into the vitreous have followed a definite thrombosis of a branch of the central vein.

I have in my files records of quite a number of other cases of thrombosis of some of the branches and three additional cases of hemorrhagic glaucoma due to thrombosis of the central vein. One of the latter, in a woman, was coexistent with an attack of phlebitis of the right leg.

CONCLUSIONS

1. Thrombosis of the central retinal vein is usually caused by an obliterating endophlebitis, but may rarely be a local manifestation of a general tendency of the veins to thrombophlebitis.

2. In the endophlebitic types, it is usually associated with general angiosclerosis and is, therefore, most common after middle life.

3. Abundant hemorrhages scattered throughout the retina, when associated with an intensely swollen disk and retina, dark engorged veins and narrow arteries, amply justify a diagnosis of thrombosis of the central retinal vein. This fundus picture does not reveal, however, whether the obstruction be a narrowing of the lumen by pressure from without, by endophlebitis within or the formation of thrombi, or by all causes combined. The fundus picture may be altered, though not in its main features, by a coexistent arterial disease, and arterial disease alone may produce the hemorrhages and exudates, but never the full picture.

4. Whatever the cause, if a case diagnosed as thrombosis of the central retinal vein is seen early, it is imperative that the patient be put under a treatment designed to aid Nature in the restoration of the circulation.

5. If no restoration of circulation can be brought about and the eye becomes permanently blind, myotics should always be used in an effort to prevent glaucoma.

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ABSTRACT OF DISCUSSION

DR. WILLIAM ZENTMAYER, Philadelphia: Dr. Coates, in a study of sixteen eyes with occlusion of the central vein, found an organized thrombus in fourteen; endophlebitis in one, and inconclusive findings in one. Leber's observations support this view. He records four cases of complete primary thrombosis and one in which only one half of the lumen was involved. As stated by Greenwood, Verhoeff contends that the closure is due to a proliferating endophlebitis. Moore finds it at times difficult to avoid the conclusion that when obstruction occurs in young subjects, the immediate cause of the clotting is infection of the walls of the vein. In chronic glaucoma, the veins have been found the seat of obliterating endovasculitis, yet in this disease the picture of so-called thrombosis of the central vein is usually absent, and this points to some added factor in the latter condition. The absence of glaucoma has been explained by slow development of the closure of the lumen. But is not this process always slow in its development? Whatever the primary change may be in so-called thrombosis of the central vein, the clinical history and picture is that of a sudden closure, such as would result from the formation of a clot.

In a consideration of the possibility of obstruction to the central artery giving rise to hemorrhagic retinitis, Oatman calls attention to the experiments of Welch which demonstrate that hemorrhagic infarction may occur in a terminal vascular system, like the retinal, and that the blood does not necessarily come from either collateral or venous sources. The bleeding results when the blood pressure is reduced one-fourth or one-fifth, but not if it falls below one-fourth. In my own experience, secondary glaucoma is not a very frequent complication, perhaps because of the routine use of pilocarpin when the obstruction is recognized, and certainly enucleation is far from being the only treatment for it. When it supervenes, the operation of cyclodialysis will sometimes obviate enucleation. This operation seems peculiarly adapted for the treatment of hypertonus associated with disease of the intraocular vessels, as the resulting reduction of tension is gradual. I confess to having held the prognosis in obstruction to the trunk of the central vein to be practically hopeless, believing the underlying conditions to be irremediable, and it is difficult to believe that vasodilating drugs can have any influence on the walls of vessels that are the seat of endophlebitis of sufficient degree to bring about closure of the lumen of the vessel. Occasional improvement has been seen and was attributed to the absorption of the extravasated blood. The results secured by Dr. Greenwood by active treatment should encourage us to institute the line of treatment he advises.

DR. F. PARK LEWIS, Buffalo: I think that sometimes in the study of pathologic conditions we arrive at a pure estimate of the actual conditions in a beginning case, rather than in one which has reached the maximum. I do not quite know what pathologic condition occurs in focal infection involving the venous structure within the eye, but I am under the impression that there are minor things that occur, in which some of the smaller branches of the retinal veins become obstructed and there occurs a mild focal infection. A case came under my observation which, perhaps, makes what I have to say more clear. A young woman had been for several

months gradually losing essential vision. There was edema around the macula, and very slight enlargment of some of the veins. The whole condition was finally relieved and sight became apparently normal by the removal of an abscessed tooth. The trouble in a condition of that kind was probably due to those peculiar changes that take place from bacteria or the products of bacteria in the venous system, obstructing the veins and thereby interfering with macular conditions. I simply suggest this as a possible method of explaining the somewhat obscure conditions that occur in advanced stages when there is complete obstruction of the veins and absolute blindness as a result.

DR. ROBERT W. MILLER, Los Angeles: A very considerable experience with sodium cacodylate in hemorrhagic conditions, and in conditions in which inflammatory exudates are present, has impressed me greatly with its value and its very prompt action. I have used it in many such cases and have been much pleased with the results. I have never used it in a case of this kind, but I wish to commend it as a very helpful agent in bringing about the rapid absorption of hemorrhages and inflammatory exudates.

DR. EDWIN N. ROBERTSON, Concordia, Kan.: I wish to report a case of partial obstruction of the central vein, occurring in a married man, aged 39, whose present and past health was and has been very good, with the exception of frequent nosebleed, which he did not consider an indication of ill health. He was a hard working man. About a week before, he complained of having a headache and noticed that his right eye was watering. On the same day, while he was working in the shop, he bumped his head against a rafter. He came to me, May 13, 1922, with vision of 18/200 in the right eye, normal tension and the field of vision practically normal, but with a little scotoma on one side of the macula. The pupils were equal and reacted to light and in accommodation. Both anterior chambers were clear. The blood pressure was 116 systolic, and 80 diastolic; the urine was normal, and the blood Wassermann reaction was negative. The teeth, tonsils and nasal sinuses were normal; in fact, no cause could be found for this condition, although from his description it would seem as though the trouble was ready to come about at the time he struck his head on the rafter, and I wondered whether or not the vision of the right eye had not already gone down, and possibly that was the reason why he had struck his head. The ophthalmoscope revealed the usual picture of dilated veins, both round and striate hemorrhages and small exudates, and edema of the retina and of the nerve head. One thing I noticed in the beginning was that, in making slight pressure on the eyeball, the vein could be completely emptied, which told me it was not a complete obstruction. Under small doses of potassium iodid his vision came up, June 6, to 18/70. It was slightly improved by correction, and, July 17, it was 18/50—1. October 3, it was 18/40. The hemorrhages had all absorbed, the edema had disappeared, and when I saw the patient the day before leaving home, his vision was 18/20—2, with a correction of about 0.75 diopter of cylinder.

DR. THOMAS H. O'CONNER, San Francisco: I have a patient under my care now whose case, I am satisfied, comes under this heading. Fortunately, before the old man lost his vision, I had had a chance to examine him and locate the old central hemorrhage that abolished central vision. When he returned a month or so after the first examination, with a red and painful eye, and no vision, I was satisfied that he had had an intra-ocular hemorrhage, probably from this cause. The tension was high, and there was no view of the internal eye, and, because of the absence of central vision, I temporized a day or two, but the tension was 97. He could bear the pain no longer; so I did a Curran operation, which relieved the symptoms, and he has recovered very satisfactorily.

DR. EDWARD JACKSON, Denver: In the paper and in the opening discussion, the literature has been gone into sufficiently to show that the real nature of these cases is still obscure. It needs to be emphasized that practically all of the cases examined are late—eyes that are enucleated for subsequent glaucoma, and present changes that are at least secondary and not essentially connected with the original obstruction of the retinal vein. One point that applies to all these cases has not been brought out. Harms reached the conclusion that whenever obstruction occurred in the arteries for any considerable time, there are also obstructions in the vein; and when history and symptoms seemed to indicate that the first trouble was in the veins, as when the veins were dilated with numerous hemorrhages and without complete loss of vision, when the case had gone on for a few months, there was evidence of extensive obstruction in the arteries. My own observation is that in all of these cases there is at the beginning some vascular disease, which very likely has involved both the artery and the vein at the start. But with reference to course and prognosis, there is a practical distinction to be drawn between the cases that are essential obstruction of the artery or its branches, and those that are obstruction of the central vein or its branches. The blood current in the artery is continually carrying the obstruction, whether it is a clot or a proliferation, from the arterial wall through the larger lumen into the smaller, making an increasing obstruction. In the vein the blood current carries the obstructing mass away from the small vessels to the larger, and there is a better prospect of partial or complete recovery. In one of the cases that I reported, there was practically a complete recovery, and standard vision was obtained. My patient subsequently had another attack, much less serious, and the smaller vessels were involved, but apparently without obstructing the larger vein. Although the vision was cut down considerably, and the man had slight retinal hemorrhages, he seems to have recovered. I recall one case, seen nearly twenty years ago, in which full vision was recovered after some months. The vision there was never completely lost, but was reduced perhaps to 20/100 and possibily less, and was low for a considerable time. The dilatation of the vein was marked for a considerable time. There were rather rapid variations in the visual field, but the patient got better, the circulation seemed to return to normal, and the vision returned to standard. With the exception of cases of hemorrhagic glaucoma, in the cases originally called retinal apoplexy and hemorrhagic retinitis, there has been recovery to a greater or less degree.

DR. ARNOLD KNAPP, New York: I want to emphasize the importance of the question Dr. Greenwood raised, namely, Are we not, under the clinical picture of thrombosis of the retina, grouping together a number of conditions with probably different pathologic bases? The only anatomic knowledge of these cases that we have are the eyes that come to examination after enucleation for glaucoma, and in the cases that I have examined, the central vein was completely closed by an endophlebitic process. There was a certain amount of associated sclerosis of the artery, but that was not the primary condition. If one remembers the pathologic picture that these cases present, I think that the futility of treatment becomes clear. The glaucoma that follows in these cases is extremely interesting, and as yet the cause is unknown. At the same time, I do not feel that it is due to an exudation of albumin into the vitreous, as the author suggests, for two reasons: 1. The glaucoma in these cases sometimes occurs quite late, after weeks and months. 2. In cases with extensive vitreous hemorrhages, we are not apt to have glaucoma. I should also add that in the cases which are in my mind at the present moment, the systematic use of pilocarpin from the start did not prevent subsequent glaucoma.

DR. HEBERT MOULTON, Fort Smith, Ark.: About eighteen months ago I had a unique and interesting experience with a case of apparent thrombosis of the central vein. It occurred in a man, aged about 25, who had had a series of boils. He had recently had a very severe one under his right arm. The day before he saw me, he discovered that he could not see out of his right eye. An examination showed a perfect picture, to my mind, of thrombosis. There was very little vision, perception of light, and that was all. The media were all clear —no exudate in the vitreous. The veins were enormously distended, the retina was swollen, and the outlines of the disk were obliterated by swelling. There were numerous hemorrhages. The interesting part of this case is that what first was a thrombosis was really a precursor of something else, because, in forty-eight hours, the young man returned

with the cornea clear, although the tension was high. He was in great pain and there was great swelling of the eyelids. The eyeball was fixed. The vitreous could not be seen with the ophthalmoscope. The obstruction to the view of the interior of the eye was not in the cornea but behind the lens. The eye was enucleated on the following day, and the vitreous was full of exudate. The choroid and retina were enormously swollen and inflamed. The case evidently was one of suppurative choroiditis or panophthalmitis. The interesting thing was seeing the eye in the stage at which one would make a diagnosis of thrombosis when in reality it was probably merely a precursor of the panophthalmitis.

DR. GEORGE SLOCUM, Ann Arbor, Mich.: In a case of thrombosis or obstruction of the central vein, obviously we cannot, with the ophthalmoscope, detect the pathologic changes that have taken place in the vessel walls; but in thrombosis or obstruction of some of the secondary veins, I have been very much struck with the fact that the periarterial tissues, where they approach the crossing of veins, show a loss of transparency, a sort of translucence that has obscured the walls of the veins, and apparently narrowed the vessel lumen so that it seems that the process has been in part, at least, due to a pathologic change in the perivascular tissues of the arteries. When the artery does not even cross the vein, but lies in its immediate neighborhood, the pathologic changes appear to be developing in veins that have not been thrombosed; indeed, in one case which I saw recently very soon after the obstruction took place, these changes were present.

DR. MARCUS FEINGOLD, New Orleans: It must be granted that what has been known until now as obstruction of the retinal vein is undoubtedly in the majority of cases due to intravenous changes or endophlebitic changes in the retina. It must be emphasized, though, that the course that many of these cases run—cases that have been classed as thrombosis—do not all allow this classification. If one remembers the two cases mentioned by the author, and the case mentioned by Dr. Jackson, one will note that if the process in those cases had been due to endophlebitic changes, no restoration of vision could have occurred. Still more must we emphasize the fact that if the changes had been due to endophlebitic processes in the veins, no treatment with nitrites, as practiced by the author, would have been of any avail. We must, therefore, conclude that at least some of the cases that go under this heading of obstruction of the central retinal vein may be due to pure thrombosis.

DR. ALLEN GREENWOOD, Boston: In the paper I have drawn attention to the published pathologic reports of Harms and Coates, who had definitely stated that thrombosis did occur, but I also called attention to the fact that the pathologist in this country who stands the highest had yet to see an eye that showed actual formation of thrombi. In regard to the treatment of such cases when an acute glaucoma develops, I have had the unfortunate experience of several times performing an iridectomy for what was apparently a simple acute glaucoma and suggesting a favorable prognosis. I have no doubt that others have had the same experience. A simple iridectomy does not relieve these cases, and the eyes had to be enucleated to relieve the pain. In the future, in a case of glaucoma secondary to venous thrombosis, I will try Dr. Zentmayer's suggestion of doing a cyclodialysis. If it succeeds in relieving this secondary glaucoma, I shall be more than pleased. The question of focal infection has been touched on by one of the discussants, and I also mentioned it in the paper. I think that some of these cases of thrombosis may be the result of such a condition. Rosenow's experiences have shown that the circulation of organisms in the blood may produce an endophlebitis, particularly if the circulation of the vein is impeded so that the organisms in the outer portion of the blood stream become attached to the intima. I have also called attention to the fact that von Hippel and many others have shown that obstruction of the central vein is almost always localized within a limit of from 0.5 to 1 cm. in length. I feel very strongly with Dr. Feingold that there are possibly many types, but I feel that there is frequently a true thrombosis. The pathologists have not always found it, because they get the eye late in the disease.

BRONCHIAL ASTHMA COMPLICATING CARDIOVASCULAR DISEASE *

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Recent advances in our knowledge of human sensitization to foreign proteins have opened numerous avenues of approach to the studies of symptom-complexes such as asthma, vasomotor rhinitis and obscure gastrointestinal disorders, as well as cutaneous manifestations of the type of angioneurotic edema, urticaria, and eczema. That these conditions are not infrequently external evidences of cellular disturbances dependent on a varied protein intoxication is now generally conceded. That the mechanism of such disturbance differs, however, from the usual immunologic processes as seen in anaphylaxis and infections is evidenced by the attempts, unsuccessful, with few exceptions, to demonstrate experimentally antibody formation to the foreign proteins by the usual laboratory methods. These peculiar states of hypersensitiveness have been characterized as "allergy," a term first applied by von Pirquet,[1] and recently "atopy" by Coca and Cooke.[2]

One of the most important of this group of diseases, asthma, has confused medical literature a good many years because of its protean manifestations and varied etiology. While the allergic character of asthma is clearly defined and readily recognized when it occurs in the form of paroxysmal attacks of dyspnea following exposure to an offending protein, it is not so clear when the attack is of subacute or chronic character and associated with organic disease of the lungs or the cardiovascular system. At once we are faced with questions of complicating secondary infection, on the one hand, and, on the other, of circulatory deficiency with its accompanying disturbances.

In discussing this subject, therefore, modern writers, notably such authorities as Walker[3] and Cooke,[4] classify, for the purpose of differentiation from true bronchialasthma, cases of asthma that are due to pulmonary infections, bronchiectasis, tumors of the lung, etc.; others that are due to affections of the nasopharynx and accessory sinuses; still others, nonallergic, that are due to cardiorenal disease, and so on. In dealing with the last named type, Cooke asserts that, in the presence of cardiorenal disease accompanied by asthmatic attacks, the physical examination, blood pressure, urine, etc., serve as a means of identification and differentiation from cases of true allergic asthma. Walker, in discussing this subject, while commenting on the fact that asthma may complicate cardiac and renal disease—the former being entirely separate from the two—also affirms that the history and physical examination are practically the most important adjuvants in the diagnosis. In cardiac asthma, he adds, full account must be taken of the diminished vital capacity of the lungs as the essential associated cause—in our estimation of doubtful value—as will be further indicated.

In describing an attack, which he calls "paroxysmal cardiac dyspnea," Walker characterizes it as marked by a "quick, panting respiration." On the other hand, cardiologists such as Romberg,[5] Mackenzie[6] and Juer-

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1. Von Pirquet, C. E.: Allergy, Arch. Int. Med. 7: 259 (Feb.) 1911.
2. Coca, A. F., and Cooke, R. A.: J. Immunol. 8: 163 (May) 1923.
3. Walker: Oxford Medicine 2.
4. Cooke, in Tice's Practice of Medicine, W. F. Prior Company, 1.
5. Romberg, E.: Krankheiten des Herzens und der Blutgefässe, Ed. 3.
6. Mackenzie: Oxford Medicine 2: 419.

gensen,[7] and physiologists such as Krehl [8] seem to have a different conception of cardiac asthma. Thus, the latter describes it as a form of extremely severe dysypnea which occurs in individuals with heart disease and is often of the most marked grade, accompanied by excessive anxiety and a terrible sense of impending death. Osler [9] refers to it as angina of the pulmonary type. The paroxysms may begin after a meal, after exercise, during the night or without any apparent cause. They occur most frequently in patients suffering from arteriosclerosis or chronic nephritis. During the attacks, the pulse is usually rapid, soft, and irregular in force and frequency. The blood pressure is usually lower than normal. Krehl likewise emphasizes the fact that the most frequent cause of cardiac asthma is a transient weakness of the left ventricle. This causes a rise in pressure in the pulmonary vessels, and increases the work of the right heart. If the latter is unequal to the task, there results a diminution in the velocity of the blood stream. In addition, there is a widespread and sudden overfilling of the capillaries, which contributes to the symptoms. This capillary distention, we may add, resembles in part the pathologic physiology seen in allergic asthma. In the latter it is probably due to a vasomotor paresis as a result of protein sensitization; in the former, to cardiac insufficiency. The ultimate symptoms may therefore be quite similar.

This resemblance in clinical appearance is likewise noted by Mackenzie, who clearly, however, recognizes the existing difference. Thus, he remarks that there is a form of dyspnea which comes on suddenly with great severity, and is so often associated with marked changes in the heart that it has received the name of "cardiac asthma," although the term is not a very good one, as it tends to confusion with true asthma, which has no association with cardiac disturbance. It occurs most frequently at night. The patient may fall asleep for a few hours, but is then awakened by a sense of suffocation which forces him to sit up. He breathes heavily and struggles to get into a position which will allow him to breathe with freedom. This dyspnea may last for half an hour or longer and then gradually subside, so that the patient may go off to sleep again. "Such attacks," he states, "resemble ordinary asthma and may be quickly relieved by a hypodermic injection."

In accordance with Krehl, Mackenzie also affirms that the foregoing condition occurs most frequently in elderly people with degenerated heart muscle, high blood pressure and changes in the arteries. It should be noted, however, that it may also be found in middle life, and may be associated with albuminuria.

Longcope,[10] in discussing syphilitic aortitis, also comments on the clinical similarity of the attacks of paroxysmal cardiac dyspnea and those of true bronchial asthma. The attacks particularly observed by him occurred in patients with aortic insufficiency, in some of whom no signs of decompensation was noted for months. They were characterized by the presence of diffusely scattered sibilant and occasionally crackling râles, acute emphysema, dyspnea of the expiratory type, and cough which terminated with the expectoration of a bit of bloody mucus. The suggestion of a bronchospasm in these cases was striking. In support of this opinion, Longcope cites the experiments of François Frank [11] on aortic reflexes. This worker, by irritating the inner surfaces of the aorta of dogs, was able constantly to produce three types of respiratory phenomena: (1) sudden apnea with the respiratory muscles in spasm either during the inspiratory or expiratory phase, or apnea with general inhibition of all respiratory movements; (2) tachypnea, without severe constitutional symptoms, and (3) a slow dyspnea of severe and grave form. The cause of this dyspnea he showed quite plainly to be a spasm of the bronchial musculature. Occasionally, too, a spasm of laryngeal muscles occurred.

We note, therefore, that various types of cardiovascular disease may give rise to so-called asthmatic attacks. The presence of a grave cardiovascular defect has been considered heretofore sufficient evidence for differentiating asthma associated with it from that of the allergic group, and assigning to the circulatory lesion the responsibility of the paroxysmal dyspnea. That this assumption is not always valid, is illustrated by the following cases:

REPORT OF CASES

CASE 1.—*History.*—A. G., a woman, aged 36, admitted to the clinic, June 8, 1922, complained chiefly of shortness of breath, especially on exertion, cough, and asthmatic attacks, particularly at night. The family history was irrelevant; there was no history of asthma or hay-fever. The patient had had "rheumatism" for thirteen years, for which she was treated at Bellevue Hospital twelve years ago. She stated that a number of years ago she was told that she had heart disease. Ever since she remembered she had been having asthma and when she was young, the asthmatic attacks occurred once or twice a year, at no particular time of the year. She was very susceptible to colds, and in recent years (date unknown) her asthmatic attacks had become more and more aggravated.

These attacks had come on every day of the year during the last four or five years. When admitted she was scarcely able to walk, because of the pain in the chest and dyspnea.

Examination.—The patient was thin and poorly nourished. The lips were moderately cyanosed. The chest was emphysematous. At the base of the left lung, numerous crepitating râles were heard. The heart presented mitral stenosis and aortic insufficiency.

Treatment and Course.—The patient was admitted to the cardiac clinic,[12] and was put on digitalis, with no improvement. She was referred to the asthma clinic for further observation. Here she was tested out to foreign proteins, with negative results. After a period of observation lasting five months, during which time she was on digitalis, she was retested. This time, April, 1923, we found that she gave positive reaction to chicken feathers, orris root and cat hair. She was instructed to remove her feather pillows and was desensitized against chicken feather protein. The digitalis was stopped. The improvement was remarkable—the dyspnea became very much less, and the asthmatic attacks disappeared. In May, 1923, she came in stating that she had had another attack of asthma, and her dyspnea returned with marked severity. We tested her against the pollens and found she was sensitive to clover, corn and timothy. She was desensitized against them with similar improvement.

The last physical examination in June, 1923, showed that the heart sounds were stronger, and roentgen-ray examination of the lungs was negative.

Summary.—This was a case of mitral stenosis and aortic insufficiency with a history of asthmatic attacks for a number of years, both winter and summer. The patient was tested out and found to be sensitive to chicken feathers, cat hair, and the pollen of corn, clover and timothy. The offending proteins

7. Juergensen: Diseases of the Heart in Nothnagel's Encyclopedia of Practical Medicine, American Edition.
8. Krehl, Ludolf: The Basis of Symptoms, the Principles of Clinical Pathology, Ed. 3, Philadelphia, J. B. Lippincott Company, 1917.
9. Osler, William: The Lumleian Lectures, Lancet, March 12 and 26, April 9, 1910.
10. Longcope, W. T.: Syphilitic Aortitis, Its Diagnosis and Treatment, Arch. Int. Med. **2**: 15-51 (Jan.) 1913.
11. Frank, François: Arch. de physiol. **2**: 508, 547, 1890; Jour. de l'Anat. **13**: 545, 1877.
12. The patient was referred from the cardiac clinic of Dr. M. A. Rothschild.

were removed, and the patient was at the same time desensitized. The cardiac insufficiency disappeared, as was shown by the absence of the pulmonary signs, and there was decided diminution of the dyspnea. The patient, thus far, has no longer had any asthmatic attacks. This had been the longest remission that she had had in the last five years.

CASE 2.—*History.*—Mrs. F. S., aged 28, was admitted, Oct. 17, 1921, had been married eight years and had one child. The family history was negative. She had had several attacks of tonsillitis. She also had had scarlet fever and measles. As far back as she could remember, she was subject to colds. Five and a half years before admission, during pregnancy she developed attacks of asthma. Her physician advised the removal of the tonsils in the hope of curing her asthma. This was done; they were simply clipped, however, with no improvement. In recent years the asthma had become worse both winter and summer, especially in the months of September and October, when attacks occurred nightly. In addition, she complained of marked tachycardia on the slightest exertion. From time to time she expectorated small amounts of bright red blood. Her nose felt stuffed, and she could scarcely breathe.

Examination.—The patient was poorly nourished and moderately cyanosed. Her eyes were congested. Her nose showed numerous polypi in the left middle meatus. The tonsils were infected. The chest was moderately emphysematous. There were scattered, moist râles at the bases. Examination of the heart disclosed a mitral stenosis and insufficiency; the roentgen-ray examination confirmed this. The report of the roentgen-ray examination was that the left side of the heart was considerably smaller than normal. The lungs showed moderate congestion. The blood count was total leukocytes, 12,000; polymorphonuclears, 62 per cent.; lymphocytes, 28 per cent.; transitionals, 3 per cent.; eosinophils, 7 per cent.

Treatment and Course.—The patient was put on digitalis. The nasal polypi were removed, but there was very slight improvement. December 23, she complained of having again expectorated some blood. Skin tests were performed with the inhalant group of proteins and foods with negative results. She was therefore put on symptomatic treatment, and disappeared from observation until August, 1922. She returned, complaining of the same symptoms and this time reacted to rabbit hair, chicken feathers, dog hair, ragweed, short and giant, timothy and clover. She was instructed to get rid of her feather pillows, and we desensitized her against goose feathers and rabbit hair, ragweed, timothy and clover. She gradually improved. At present, her asthma has almost completely disappeared. The last time she expectorated blood was in February, 1923. Her chest is clear. The dyspnea on exertion is practically gone.

Summary.—This was a case of mitral stenosis and insufficiency, with an asthma of five years' duration, preceded by a number of "colds" in the head. The asthma was associated with bloody expectoration, which in all probability was due largely to the mitral stenosis and pulmonary congestion. She was found to be sensitive to the epidermals and pollens. Treatment with these relieved the asthma, abolished the continuous dyspnea, and restored the functional efficiency of the heart by relieving the strain on the right ventricle.

CASE 3.—*History.*—A. C., a woman, aged 46, maid by occupation, admitted to the clinic in February, 1923, complained chiefly of shortness of breath on exertion and cough for the past two years. Associated with the dyspnea was substernal pain, which radiated to the left shoulder and spine. This was accompanied by symptoms of "indigestion." On one occasion, when she had had an especially severe attack, the pain went to her right shoulder and stayed for two weeks. It was never very severe, but would last throughout the day and night when it occurred, and left her quite weak. Her first asthmatic attacks, which commenced in August, 1921, lasted for six weeks without cessation. Thereafter attacks recurred throughout the winter with moderate severity, and her shortness of breath was marked. Subsequent to November, 1922, she caught "cold," and this she stated, went down to her chest and did not seem to leave her. As soon as she recovered from one cold, another supervened. On closer inquiry, she admitted to having been subject to frequent "colds" in the nose and throat for seventeen years. Tonsillectomy had brought no relief.

Examination.—The patient was tall and well nourished, and of the plethoric type. She weighed 210 pounds (95 kg.). The chest was moderately emphysematous. The roentgen-ray examination of the lungs showed no abnormality. Examination of the heart showed an enlarged left ventricle, 15 cm. from the midsternal line. The base of the aorta was 7 cm. in diameter. Here was heard a short, rough, systolic blow followed by an accentuation of the second aortic sound. The muscular quality of the heart was fair. There was no apical murmur. The blood pressure was 180 systolic, and 100 diastolic.

The patient was tested out to various proteins of the inhalant group, and foods, to all of which she was negative. She showed, however, a positive reaction to the pollens of timothy, clover and ragweed. In view of the positive tests and the history of colds for seventeen years, followed by asthma, which first commenced in August, 1921, the diagnosis of asthma due to sensitization by the pollens mentioned was made.

Treatment and Result.—The patient was treated on this basis. She has distinctly improved, as her cough has disappeared and dyspnea likewise. She has had no asthmatic attacks since April, 1923, although previously they occurred continuously for two years.

CASE 4.—*History.*—M. B., a man, aged 56, manager of a drapery establishment, referred by Dr. A. A. Epstein, July 24, 1923, stated that his father and mother, one brother and one sister had died of cardiac disease; there was no history of asthma in the family. In the summer of 1910 he had what was called bronchitis. In 1915 he had renal lithiasis. About that time he was told that his blood pressure ranged between 160 and 180 systolic. During that year he also developed gout, which condition bothered him from time to time until the present. Accompanying the hypertension he had anginoid pains, which radiated to the shoulder and arm. In 1918, he developed influenza and was confined to bed for three weeks. Following the influenzal attack in 1918 his tension dropped. In November and December, 1922, he acquired a cough, occasionally accompanied by some bloody expectoration. He was examined by his physician, who told him that his heart had dilated. Cardiac medication was followed by some improvement. About the first week of June, 1923, he suddenly developed difficulty in breathing, with choking sensations in the chest and precordial area. The attack usually came on at 2 a. m., and would last for two hours and leave him exhausted. During the day he felt better, although his chest "rattled," and he sneezed from time to time. This condition had been lasting for seven weeks. When examined by Dr. Epstein, he had asthma and auricular fibrillation.

Examination.—The patient was poorly nourished; he was of average height. He had a yellowish-white complexion, and looked quite sick. The chest was long and narrow. The lungs were normal. The heart was considerably enlarged both to the right and to the left. The muscular quality of the heart was rather poor, and auricular fibrillation was present. The radial arteries were markedly sclerotic.

The average blood pressure was 140 systolic and 90 diastolic. The liver was felt 5 cm. below the right costal border. There was no edema of the extremities.

In view of the history of asthma for the preceding seven weeks, which naturally fitted in with the pollinating season of the spring grasses, he was tested out against these pollens. He was found to be sensitive to June grass, red top, clover, corn and sweet vernal grass. Tests in the inhalant and food groups were negative. No treatment was instituted, because the offending pollens were no longer operative.

Course.—When seen, Aug. 10, 1923, the patient was free of asthma, and had been since July 28, 1923. Although it is evidently too early to draw any conclusions from this case, the significant points are that (*a*) his attacks commenced simultaneously with the spring pollen season; (*b*) the so-called bronchitis in the summer of 1910 may have been an allergic phenomenon; (*c*) with the termination of the season, his asthma stopped spontaneously; (*d*) in spite of his hyperten-

sion and cardiac disease in 1915, with an attack of decompensation in November, 1922, he never experienced any such asthmatic attacks.

COMMENT

Analysis of these cases emphasizes certain striking points. Cases 1, 2 and 4 showed distinct valvular disease; Case 4, general arteriosclerosis and auricular fibrillation with a history of hypertension followed by a fall in tension coincident with myocardial insufficiency as a result of influenza. All four were accompanied by asthmatic attacks. On the first consideration, the presence of cardiac disease or cardiovascular disease with hypertension and asthma would place this group of patients into the so-called "cardiac asthma" classification. Cases in which asthma commences at the age of 40 or later are not apt to be due to sensitization. Other causes, such as cardiovascular disease or focal infections in the lungs or sinuses, are more prone to be the etiologic factors. In addition to this, the third patient presented a trend of symptoms with her asthma that simulated anginoid pain, which, presumably, the associated cardiovascular findings strongly supported. On the other hand, it is not uncommon for asthmatic patients to refer their pains to the substernal region, epigastrium and scapulae. In all probability, the first is due to spasm of the bronchi and the second to the spasm of the diaphragm. In fact, after a fit of violent coughing, these patients often complain of pain between the shoulders or lower part of the back. Granted, however, that Patients 3 and 4 may still have had true angina, the asthmatic attacks, as shown by the subsequent developments, were not cardiac in origin. In a word, in all the cases under observation, question as to the cause of the asthma depended on three factors; namely, the history, skin tests, and response to treatment, or freedom attacks with the disappearance of the exciting cause.

The first patient gave a history of having asthma as far back as she could remember. The second patient dated her asthmatic attacks six years before observation, but these were more frequent during the months of September, October and November—the pollen season. The third patient dated her asthma two years back, but the attacks commenced first during August, the ragweed pollen season; the fourth patient in June and July, the spring pollinating season.

The striking points therefore are: (1) in the first patient a history of asthma of a good many years' duration, which usually is significant of allergic asthma; (2) in the others, in addition, characteristic seasonal variations. The prolongation of the attacks during the winter months was caused by other sensitizing factors, as for example the inhalants group in the first two cases, or secondary infection, as was assumed because of other negative findings, in the third case.

SUMMARY

In none of four cases of cardiovascular disease with a history of asthma was the asthma due to the organic cardiovascular disease.

This was shown by (*a*) the history, (*b*) skin tests and (*c*) desensitization and freedom from asthmatic attacks, except in the fourth case, in which the cessation of attacks followed the termination of the pollen season. The improvement that succeeded, both in the dyspnea and subjective cardiac symptoms, was due to the improvement in circulation after the strain on the right ventricle, caused by asthmatic attacks, was removed.

The presence of valvular disease and of diminished vital capacity does not serve to explain or differentiate so-called asthma due to heart disease from that of an allergic character.

Diminution in the vital capacity may be present in emphysema, and this occurs in long standing asthma, even of sensitive type, as well as in cardiac disease. When the two are present, it is obvious that it cannot serve as a means of differentiation.

Allergic asthma and cardiovascular disease are distinct entities which obviously can coexist.

129 East Sixty-Ninth Street.

THE PLACE OF THE LOW CERVICAL CESAREAN SECTION *

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It has long been recognized that the risk of cesarean section rises rapidly the longer the patient has been in labor, and the longer the membranes have been ruptured. The mortality of cesarean section in the ideal case, when the patient is operated on before labor, is negligible. In the patient in labor for a considerable time, the mortality becomes a factor to be reckoned with and in the neglected case it becomes formidable. In the preantiseptic days, in an insuperably obstructed labor, the only alternative was to destroy the living child, and the obstetrician sought methods to deliver the child by operation and yet avoid the opening of the peritoneum. The original extraperitoneal operation, with incision parallel to Poupart's ligament, blunt dissection under the peritoneum to the cervix and vagina and delivery through the flank, was suggested by Joerg in 1809 but done first by Ritgen in 1821. The formidable surgical infection following this procedure led to its abandonment. It was revived sporadically but never for any length of time. In 1906, Frank again revived the operation, and since then some twenty-five modifications have been devised. They are extraperitoneal in name only. They are really all transperitoneal. The word extraperitoneal means only that when the uterine wound is closed it is extraperitoneal because it is covered with the uterine peritoneum, which had been previously stripped down to expose the lower uterine and upper cervical portions of the uterus behind the bladder. The main object of the operation is to minimize, as far as possible, contamination of the abdominal contents, and to cover the uterine incision, after closure, by peritoneum. It is a pity that the word extraperitoneal is so commonly applied to these operations. It gives a very false conception of their true nature. The term "low cervical cesarean section" describes them much better.

INDICATIONS

The indications for the low cervical cesarean section cover the largest field. Only a small percentage of patients needing cesarean section come to operation at the ideal time; i. e., before labor. The large majority are those who have been in labor for some time, in whom repeated examinations have been made, even ineffectual attempts at delivery by forceps or other-

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wise, and when the membranes have been ruptured sometimes days before. It is in these cases that the classical cesarean section is attended by too much danger, although, of course, often successful. It subjects the patient, however, to unjustifiable danger. As an alternative there is axis-traction forceps, with considerable risk of failure and certainty of serious injury to the mother; craniotomy and destruction of the living child—a situation never tolerable in the light of present-day knowledge; or hysterectomy, involving the entirely unnecessary sacrifice of the uterus. The indications can be classed under the following heads, several of them frequently coexisting in the same patient:

1. A patient in labor for a considerable time, with an impossible disproportion between the head and pelvic inlet or outlet.
2. Ruptured membranes, usually with considerable dilatation of the cervix.
3. Many previous examinations, no matter how carefully made.
4. Ineffectual attempts at delivery. These cases are often complicated by prolapse of the cord or an extremity.
5. Patients on the borderline, in whom a test labor is carried out before deciding that cesarean section is necessary. In these cases examination should be made by rectum.

These operations depend on the fact that, during labor, the lower uterine segment thins out, the uterus draws up away from the bladder, and the attachments of the vesico-uterine peritoneum are loosened, thus facilitating the exposure of the lower uterine segment. The longer the patient has been in labor, the easier is the operation and the greater space is afforded. Of course, the child must be alive and in good condition.

TECHNIC OF THE OPERATION

The technic here described is essentially that of Beck, with a few minor modifications that experience with the operation has suggested.

1. The abdomen is prepared as for any other emergency abdominal section. We prefer shaving completely, scrubbing the abdominal skin for ten minutes with tincture of green soap and hot water with gauze mops, and rinsing frequently. The skin is then dried, scrubbed with alcohol for one minute, and painted with 4 per cent. picric acid in 95 per cent. alcohol. Then it is covered with dry, sterile gauze and binder, the latter fastened down by straps to the thighs so that it cannot ride up and expose the skin.
2. The patient is anesthetized by ether (drop method) and arranged on the table in the lithotomy position. Morphin is not given preliminary to anesthesia.
3. The vagina is then thoroughly scrubbed with cotton, tincture of green soap and hot water, dried, and painted with 7 per cent. tincture of iodin. The excess iodin over the perineal skin and buttocks is removed with alcohol. If the presentation is such that an arm, hand or foot is prolapsed, this member is scrubbed, painted with iodin, and tucked back in the vagina before the latter is packed. The vagina is then packed with sterile gauze.
4. The patient is then catheterized with a rubber catheter. A moderate amount of urine in the bladder makes the operation easier. A large amount adds to the difficulty. It is impossible, in labor, thoroughly to empty the bladder by catheter; enough urine to make the bladder prominent is always left to each side of the presenting part.
5. The patient is then arranged on the table for abdominal section and raised to a moderate Trendelenburg position. The abdominal skin is exposed and repainted with 4 per cent. picric acid in 95 per cent. alcohol.
6. The abdomen is opened by a median incision from the umbilicus to the symphysis. The skin is covered with rubber-dam, with the edges of the incision clipped to the wound edges.
7. The sides of the wound are separated by a Balfour retractor, and a coffer-dam of gauze is packed from one broad ligament to the other, just above the upper level of the wound, across the anterior face of the uterus. This protects the upper abdomen from possible contamination.
8. The vesico-uterine peritoneum, about 2 inches below its firm attachment to the uterus, is incised from one round ligament to the other.
9. Under this lower flap, the bladder is pushed down by blunt dissection, as far as possible and held down by a broad retractor in the lower angle of the wound. The upper flap is freed up to its firm attachment to the uterus, and is left held by a single clip, as a guide.
10. As the vesico-uterine peritoneum is incised, the patient is given, hypodermically, a dose of pituitary extract and of ergot, deep in the muscle of the thigh. The practice of injecting this in the uterine muscle is of no additional value and is to be avoided.
11. By the blunt dissection of the bladder, the lower uterine segment is exposed. In the middle line, at the lowest possible point behind the bladder, a small wound is made into the cervical canal. Through this is inserted the blunt blade of a pair of bandage scissors, and the lower uterine segment is slit up cleanly in the middle line, nearly to the firm attachment of the peritoneum of the upper flap. A guide stitch of No. 3 chromicized catgut is placed to mark the upper and lower angles of the wound and to pull the uterine wound into the abdominal wound after the child is extracted. This makes it much more accessible for suturing.
12. The operator inserts the first two fingers of the left hand in the uterine wound, puts his forefinger in the child's mouth, and rotates the face into the wound This most important step should never be neglected.
13. Short Hale-Sawyer forceps are applied to the child's head, and the head is shelled out through the wound. There is usually not room enough for the operator's hand to do this satisfactorily. This step is usually more easily executed if the forceps are applied upside down.
14. By gentle traction on the child's head, the body is extracted. Should the presentation be a breech, the delivery is made by the feet, and no forceps are needed.
15. The cord is clamped in two places, cut, and the child handed to an assistant to be revived if necessary.
16. If any attempt is made at this time to hurry the delivery of the placenta, considerable hemorrhage will result. It is not dangerous, but fills the pelvis and makes the wound closure more difficult. It is best to proceed with the closure of the wound and give ample time for spontaneous separation of the placenta.
17. Interrupted No. 2 chromic catgut sutures, embracing only the thickness of the muscle, are placed. Six or eight are usually required.
18. About this time, the placenta is fully separated and bulging in the uterine wound. It can then be extracted without bleeding, between two of the interrupted stitches. If there is sufficient dilatation of the cervix, the cord can be tucked back in the cervical canal, the uterine wound completely closed; the vaginal packing removed, and the placenta expressed through the vagina by moderate abdominal pressure. This almost entirely obviates any bleeding in the wound, and is desirable, provided the cervical dilatation is sufficient.
19. By traction on the guide sutures, the uterine wound is pulled up into view, and is closed by a continuous No. 2 chromic catgut stitch, embracing only the muscle. It is considerably easier if this stitch is begun at the lower angle of the wound, behind the bladder. The interrupted stitches are then tied, to act as splints, and the guide stitches removed.
20. A second continuous stitch of No. 2 chromic catgut is then placed to cover the first layer. There is an indistinct fibromuscular layer visible at each side of the line of incision. If this is used as a covering layer, it makes a very neat and secure closure.
21. The lower peritoneal flap is held well up and all blood and clots are sponged out, until the surface of the exposed lower uterine segment is thoroughly dry.

22. The upper peritoneal flap (the short one, not containing the bladder) is tacked down as low as it will stretch comfortably, by a few interrupted No. 2 chromic catgut sutures.

23. The lower peritoneal flap is carefully sewed down, overlapping the upper flap, by a continuous No. 2 chromic catgut suture, so that all raw surfaces and suture lines are covered. Only slight tension should be put on this flap, to avoid necrosis of the sutured edge. When this line of sutures is completed, all visible trace of operation disappears. The suture lines are completely covered, and except that the bladder is slightly higher on the anterior uterine surface than usual, there is no evidence of any operation on the uterus. During the entire operation, none of the abdominal contents, except a moderate area of the lower uterine segment, have come into view at all.

24. The coffer-dam of gauze is removed and the abdominal wound closed in layer as after any abdominal section.

As the uterine operation has been in an area not free from contamination, it is not advisable to attempt the removal of the appendix. The incision is such as not readily to expose it, and in the absence of previous symptoms of trouble it is best let alone. If it is deemed necessary to remove it, this part of the operation requires a complete change of gloves for everybody concerned. If the vaginal packing has not been removed to secure the delivery of the placenta, it should be removed before the patient leaves the operating room.

COMPLICATIONS OF THE OPERATION

1. *Hemorrhage.*—This should not be feared. If the ergot and pituitary extract have been given as described and no attempt has been made to hasten the separation and extraction of the placenta, hemorrhage is a negligible factor. Should the bleeding appear excessive, repetition of the ergot and pituitary extract is all that is needed to control it. Packing of the uterus, because of contamination, is dangerous, and should not be needed. We have never seen the need for it, in any case.

2. *Injury to the Bladder.*—This has never occurred in any of our cases. It is conceivable that too great roughness in separation of the bladder might result in a tear, but a little reasonable care seems all that is needed to avoid such an accident.

3. *Injury to the Broad Ligament Veins.*—This is much more likely to result from rough handling or the use of sharp or unduly long retractors. Here, again, choice of proper instruments and proper care in handling should avoid this accident.

4. *Extension of the Uterine Wound by Tearing During Delivery.*—This is very likely to happen, but is minimized if the uterine incision is begun low enough behind the bladder and the hand is not used to extract the head. It seems at times, however, impossible to avoid a certain amount of extension of the wound, even when every precaution is taken. It merely makes the closure a little more difficult, because the tear is ragged, but is not a serious complication. The amount of space in the lower uterine segment varies with every patient, and in different presentations. It is greatest in face presentation, next in occipito-anterior vertex, and least in transverse presentation. The longer the patient has been in labor, the more room there is likely to be.

5. *Permanent Suture Material.*—The use of silk, silkworm gut, linen thread or wire should never be countenanced in the uterine wound. It serves no good purpose, adds nothing to the security of the closure, and often detracts from it, and is exceedingly likely to be the basis of an abdominal fistula of very long duration, or even a secondary operation to remove the offending material. We have reoperated in fifteen cases for this reason, the original cesarean section having been done by other surgeons.

AFTER-TREATMENT

The after-treatment is much the same as for an abdominal section. The lack of reaction after operation and the patient's comfort are usually surprising. The following orders are those given as a routine, and are varied only if special indications arise.

1. The head of the bed is elevated on blocks 12 inches high, to promote better drainage of the birth canal. The patient is kept flat on the back for forty-eight hours and then may be turned.

2. If there is discomfort sufficient to justify it, a hypodermic injection of morphin sulphate, ⅙ grain (0.0109 gm.), and atropin sulphate, 1/150 grain (0.00043 gm.), is given every six hours but is seldom needed, and is better avoided if possible.

3. Diet is restricted to water in small amounts and frequently, as soon as the ether nausea is past; liquids are given after twelve hours, and soft diet after forty-eight hours.

4. At the end of twenty-four hours the patient is given an enema of emulsion of asafetida, 6 ounces (178 c.c.); compound spirit of ether, 2 drams (7.5 c.c.), and water to make a pint (475 c.c.), to relieve any flatulence.

5. She is given hypodermically pituitary extract, twice daily, and physostigmin (eserin) sulphate, 1/40 grain (0.00162 gm.), and strychnin sulphate, 1/40 grain (0.00162 gm.), three times a day. This is to control distention, and is stopped on the third day.

6. She is given a daily vaginal douche of sterile water.

7. At the end of forty-eight hours, she is given a course of mild mercurous chlorid followed by two compound cathartic pills, and thereafter what routine laxative may be needed.

8. The wound is dressed in forty-eight hours, and every forty-eight hours thereafter. Trouble is not infrequent, owing to the fact that contamination is unavoidably present during the operation. The cervix and vagina are opened into, and no matter what their previous preparation, asepsis cannot be assured.

9. The child is nursed exactly as if no operation had been performed.

10. The rest of the convalescence closely aproximates that of a normal labor case. Confinement to bed should last for two weeks.

Distention, so common after the classical cesarean section, is rare after the low cervical type. Usually all that is needed to control it is the pituitary extract and physostigmin above. If foul lochia develop, vaginal douching of tincture of iodin, 7 per cent., one-half ounce (15 c.c.), 95 per cent. alcohol, 8 ounces (236 c.c.), and up to 2 quarts (liters) once daily is sufficient to control it. If not, there is no danger in using the same solution as an intra-uterine douche.

ADVANTAGES OF THE OPERATION

The operation is particularly devised to apply to those cases in which the classical cesarean section would be unduly dangerous. It affords a safe method of delivery in cases in which the classical operation would only too often be followed by peritonitis. This is the chief claim for consideration. Others almost equally important are:

1. There is secure healing of the wound, which is in a portion of the uterus at rest during convalescence.

2. There are no raw surfaces or suture lines that could be the site or cause of adhesions.

3. There is no soiling of the general peritoneal cavity by liquor amnii or meconium, from an area at least potentially infected.

4. Should there be contamination of the uterine wound, it is securely sealed extraperitoneally, and the drainage is naturally out through the cervix; and the lower pelvis is well known to be extraordinarily tolerant of infection.

5. There is less shock, less bleeding and fewer chances for postoperative complications.

6. There is less danger of rupture of the uterine scar in subsequent labors, and if it should occur it is in a situation in which there is little likelihood of serious complication.

This is a rather formidable list of advantages, sufficient, at least, to give the operation a well defined place in obstetric practice.

DISADVANTAGES

Only two disadvantages occur to us:

1. It is more difficult than the classical operation; but this should be no bar to an operator with any claims to enter the abdomen at all. The time needed for the operation will be about double that of the classical operation, but ordinarily from thirty-five to forty minutes is all that is needed, in the absence of extraordinary developments.

2. It is not an easy or advisable operation unless the patient has been in labor, owing to the small space available in the lower uterine segment, previous to the time this has been stretched in the first stage of labor. But in this type of patient there is no need for the operation at all. The classical operation is satisfactory in these known clean and elective cases, and there is no point in doing the longer and more difficult one.

REPORT OF CASE

As an example of the advantage of this type of operation when it is indicated, the brief history of one of the patients in this series is of interest:

The patient had been in labor for more than twenty-four hours, in the care of a midwife. As her delivery seemed obstructed, the midwife called a physician, who performed a podalic version. No pelvic measurements had been taken. It was then found, with both feet protruding about 2 inches from the vulvar orifice, that the thighs would not come into the pelvis at all. The patient was sent to our service, and a low cervical cesarean section was performed. The feet had been protruding for about four hours and were washed, painted with iodin, and put back in the vagina, which was packed. By the time the lower uterine segment was opened, the child, resenting this treatment, had kicked the packing out of the vagina, and its feet were again protruding. It was therefore necessary to reach from above out through the vulva, through a vagina which, because of the bulk of the legs, had been very inadequately prepared, and draw the feet back and out through the uterine and abdominal wound. In spite of this, the patient had no peritonitis, and, barring a slight contamination of the lower inch of the abdominal wound, no trouble in her convalescence. With the classical operation, it is hardly conceivable she would have survived.

THE SCAR IN SUBSEQUENT LABORS

We know of no case in this series in which the scar has ruptured in a subsequent labor.

We have several times done a second cesarean section on a patient on whom this low operation had previously been done by us. The absence of any visible scar was very interesting. Except for a slight roughening of the lower portion of the uterus, no uterine evidence of previous operation was evident.

RESULTS

Of our total number of 282 cesarean sections of all kinds, 107 have been done by the method here described. All of these patients were in advanced labor at the time, and in condition unfavorable to the classical operation. Two patients died, one from gangrene of the transverse colon, due to mesenteric embolism, and one from acute dilatation of the heart due to chronic myocarditis, as she was on her way to the taxicab that was to take her home, eighteen days after operation. There were no cases of peritonitis.

We have learned, therefore, that this operation has a very distinct and valuable niche in obstetric practice. In the case for which it is indicated, it avoids an entirely unnecessary and unjustifiable risk of peritonitis, which would attend the classical operation, and secure the delivery of a living child with fewer postoperative complications and a better end-result than any other form of delivery possible under the circumstances.

1823 Pine Street—1923 Spruce Street.

MENINGITIC SYMPTOMS RAPIDLY FOLLOWING LUMBAR PUNCTURE AND RAPIDLY DISAPPEARING*

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Infection of the spinal meninges following lumbar puncture has been reported in rare instances, but we have never previously observed, nor found recorded in the literature, that severe symptoms of meningitis, with many polymorphonuclear cells in the spinal fluid, may follow lumbar puncture within a few hours and disappear in little more than twenty-four hours after their first appearance. This, however, was our experience recently, and the case caused us great anxiety for a short time. It seemed to us that possibly the meningeal blood vessels were congested from the epileptic attacks, as such congestion is not infrequent in convulsions, and that, as a result of relief of pressure, even though slight, by lumbar puncture, escape of blood cells, possibly by diapedesis, occurred and caused meningeal irritation. We have asked for information from three well known serologists, Drs. Herbert Fox, F. B. Lynch and John A. Kolmer, and not one of these has ever had a similar experience. The replies of Dr. Fox and Dr. Kolmer to this question are included in this paper.

The escape of bacteria into the dural canal as a result of lowering the spinal pressure has been carefully considered and dismissed as too improbable. This possibility of infection has influenced many in avoiding lumbar puncture when the presence of bacteria in the blood was suspected. We are unable to believe that the findings by the lumbar puncture in our case could have been caused by bacteria, as the symptoms of meningitis disappeared twenty-seven hours after they were first noticed. Had there been bacterial invasion there would not have been such a rapid subsidence of symptoms. The quantity of cerebrospinal fluid removed was very small, only 6 c.c., too little to cause much fall of intraspinal pressure, but possibly enough to affect the distended blood vessels of the meninges.

The report of the negative sugar in the fluid of the first puncture was probably a mistake. The same mistake occurred in another case about the same time, and positive sugar finding of the second lumbar puncture made twenty hours after the first puncture, when the fluid contained 2,340 polymorphonuclear cells per cubic millimeter, makes the negative finding of sugar in the fluid of the first puncture probably incorrect.

Spontaneous meningeal hemorrhage has been the subject of study by recent German writers.[1] It may pro-

* Read before the Philadelphia Neurological Society, Oct. 26, 1923.

1. Goldflam: Deutsch. Ztschr. f. Nervenh. **76**: 158, 1923. Meylahn: Ibid. **78**: 78, 1923. Herman, Ibid. **79**: 34, 1923.

duce rapidly developing symptoms of meningitis. Meylahn believes that the method of production is by diapedesis, and that the hemorrhage may produce symptoms of meningitis from which recovery may occur in mild cases.

In our case, blood was not found in the fluid of the first puncture, but red blood cells were found in the fluid of the second puncture, and it is not necessary to attribute this finding to a contamination at the second puncture, resulting from the penetration of the needle into a blood vessel. The second fluid was cloudy, but not red.

The chief importance of the case we report is the evidence it presents that severe symptoms of meningitis following rapidly on lumbar puncture are not always indicative of bacterial invasion of the meninges, and may disappear within a few hours.

Dr. Fox has given the following opinion of the findings:

The meninges, like all the closed serous membranes, are very rich in capillaries. A sudden relief of the intraspinal pressure would be followed by engorgement of these vessels, which, under conditions of high blood pressure, might be followed by small hemorrhages. The irritation of free blood might easily cause an accumulation of leukocytes as a response, for the purpose of removing the foreign material. In irritated meninges it is apparently easy for more leukocytes to accumulate, since the introduction of serum in meningitis showing a small number of leukocytes in the fluid can increase this number. What the increase would be is difficult to state, but it might amount to several hundred per cubic millimeter. I recall having seen a very decidedly purulent exudate removed from a case that had been diagnosed at the first lumbar puncture as serous meningitis, but in which meningitic antiserum had nevertheless been administered; it was not a case of epidemic meningitis, and bacteria of no kind were found. I think the man recovered but I am not sure of this fact.

Dr. Kolmer offers the following explanation:

I was very much interested in your account of the reaction following spinal puncture in a case of epilepsy. I do not quite understand the significance of the negative report on sugar with the first spinal fluid [as shown, this finding was probably a mistake], since a trace of glucose is found in normal spinal fluid. Unquestionably, a meningitis followed the first spinal puncture but according to the report rendered to you, it was probably an aseptic type of meningitis, since the cultures were sterile and the few organisms found in the smears were not identified.

I am at a total loss, however, to suggest anything as to the cause of this meningeal reaction. I have never observed it after a rather large number of spinal punctures. One naturally thinks of the possibility of an infection with staphylococci from the skin, but under the circumstances this can be excluded. The only other factor that suggests itself to me is that some bacterial invasion of the central nervous system existed at the time of the spinal puncture, and that the lowering of pressure and disturbances to the choroid plexus enabled these organisms to excite a temporary meningitis. However, this is rather a far-fetched hypothesis. I have never observed a similar case.

REPORT OF CASE

A man, aged 25, well developed, admitted to the hospital, Aug. 28, 1923, had idiopathic epilepsy, the attacks having begun when he was 6 months old, and being typical. The systolic blood pressure was 115; diastolic, 85. Within twenty-four hours before the lumbar puncture, the patient had had two epileptic attacks, the last being three hours before the puncture. Lumbar puncture was done at 3 p. m., August 30. The pressure was 12 mm. of mercury. The fluid, of which 6 c.c. was removed, was clear, and showed 3 mononuclear cells and 1 polymorphonuclear. The globulin was positive; the sugar, negative. At 6 o'clock the following morning, August 31, the patient's temperature was 101 F. At 9 o'clock he had a stiff neck, positive Kernig's sign, and seemed to be quite ill. He complained of a "light feeling" in his head, but had no headache. At 10 o'clock the leukocytes numbered 10,000. At 11 o'clock a second lumbar puncture was done. The fluid was under 15 mm. pressure and was very cloudy; 6 c.c. was removed. A cell count gave 2,340 polymorphonuclears per cubic millimeter, a few mononuclears and a few red cells, approximately 100 per cubic millimeter. Globulin and sugar were present. A smear was examined by Dr. Lynch, who reported: "No intracellular organisms seen. No gram-negative organisms seen. Remarkably few bacteria present for the number of white cells." Dr. Lynch was of the opinion that the few bacteria seen did not come from the spinal canal, but that they were probably present on the slide on which the smear was made and probably were dead as shown by the fact that culture of this fluid was attempted and the report three days later was, "No growth." At 6 o'clock, September 1, twenty-four hours after the rise in temperature, the temperature was 100. At 9 o'clock it was 98. The patient felt much better. The rigidity of the neck was disappearing, Kernig's sign was doubtfully positive. He had no headache. The leukocytes numbered 5,600. The temperature rose that night to 99 degrees and subsided to normal the following morning, to remain so. On the morning of September 2, seventy-two hours after the first lumbar puncture, there were no signs whatever of any meningeal irritation. The patient got up two days later, and has been well ever since that time.

3600 Walnut Street.

Clinical Notes, Suggestions, and New Instruments

EXTRA-UTERINE PREGNANCY AT FULL TERM

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Extra-uterine pregnancy at full term is a somewhat rare condition. Reliable statistics report something less than 200 cases in medical literature, of which about thirty patients were operated on and a living child delivered. Although about 1 per cent. of all pregnancies are extra-uterine, the ovum rarely lives and succeeds in attaching itself to vascular organs and developing to full term.

In the case reported here, the child arrived at full term, living, strong and well developed; died in utero, and three weeks later was removed by operation.

REPORT OF CASE

Mrs. W. E., aged 29, a farmer's wife, was always well and strong, had been a country school teacher for the last seven years. She had measles and mumps when a child, influenza four years before the present illness, and smallpox two years later. She had menstruated regularly every three or four weeks since the age of 13, but had always had considerable pain in the lower abdomen, and backache during the period.

The patient was married, Oct. 8, 1921. The last menstruation began December 12, after which there was no show of blood until after operation and removal of the dead fetus. She felt well and had no pain or distress in any way until the evening of Jan. 25, 1922. While doing up the supper dishes that evening she was suddenly seized with a sickening pain in the upper abdomen, felt faint, and had to lie down. The next morning she got up but felt weak. She again had severe pains that forenoon and had to go to bed. She stayed in bed that time for four days, and had some fever. She was up and about again from February 1 to February 18, but felt weak and looked pale. On the latter date she had another attack of severe pain throughout the entire abdomen, and the attending physician had to catheterize her for three days. The pain was so severe that she could stand nothing touching the abdomen, could not turn in bed, was nauseated and vomited, retained no food for seven days, and had no bowel movement for two weeks. Her condition then improved somewhat and she was taken to a hospital in Minneapolis,

March 1. March 3 she was anesthetized with gas and ether, examined, and a pessary placed in position to support the uterus. She remained in the hospital nine days, and seven more at the home of a sister, before returning to her home in the country. The pessary was kept in position for five weeks.

After her arrival home she was very sick again and vomited for three days. From this time, about March 26, she felt better, became stronger, and got along fairly comfortably until the time of expected confinement, September 19.

Fetal movements began June 1 and continued up to October 5, at which time her physician reported the heart sounds as unusually distinct. There was an exceptional amount of movement, October 3. All fetal movements stopped between the 5th and the 8th, and an examination then showed that the fetal heart sounds had disappeared. I first saw the patient two weeks later, October 24, in consultation, at her home. At this time she had no pain or any evidence of oncoming labor. The breasts contained very little secretion. The cervix was soft and enlarged, but with no dilatation. It was impossible to determine the body of the uterus. A bruit could be heard on the left side of the abdomen, but there were no fetal sounds. There was nothing special at this examination to indicate the true condition, except that there was apparently a dead fetus past full term, and it was decided to bring on uterine contractions by packing the vagina and cervix to start a natural delivery if possible.

Four days later I was again called and informed that all efforts to bring on contractions had failed. That forenoon, the patient had been anesthetized and the cervix dilated. There was no hemorrhage and no contractions. Examination at this time showed that the cervix was fully dilated, and it was possible to pass the finger to the top of the uterus. The actual condition was then self-evident.

The patient was removed to my hospital at Buffalo. A roentgen-ray examination showed the fetus to be in a sitting position, with the head at the margin of the ribs and the feet in the left iliac fossa, the back anteriorly and to the right. The shadow of the placenta could be seen apparently attached to the left abdominal wall.

The patient was operated on, November 1, at 8:30 a. m., by means of a right rectus incision 7 inches long, separating through the body of the muscle, and extending above and below the umbilicus. When the peritoneum was opened, the thin amniotic sac appeared. It was adherent to the transverse colon and small intestines, and it was impossible to pass the hand around it. The sac was opened into just to the edge of the placenta, the fluid contents were carefully removed, and the child was delivered. It was fully developed, 22 inches (55 cm.) long, and weighed 7½ pounds (3.4 kg.) and had evidently been dead several weeks, as the eyes were sunken and the skin peeled off easily. An effort was then made to remove the placenta, but it had to be given up on account of the hemorrhage that followed any attempt to separate the placenta from its attachment to the abdominal wall. The sac was sewed to the peritoneum and the wound left wide open and loosely packed with gauze, which was changed daily. All efforts during dressings to hasten the separation of the placenta were accompanied by hemorrhage and had to be abandoned, until finally, November 28, I succeeded in cutting away and removing about half of the placenta with practically no discomfort to the patient. December 1, the entire placenta was removed. The wound was kept loosely packed with gauze, and several ounces of 1 per cent. dichloramin-T poured into the cavity daily until it was sterile. The cavity cleaned out speedily and the wound closed so that the patient was able to leave the hospital, December 15. I thought it would be necessary, and fully intended to do an operation for closure of the abdominal wall, but discovered that Nature would not be denied. The wound healed entire, and a year later examination showed the abdomen firm, with the patient attending to all the duties of a farmer's wife.

COMMENT

There are several features of the case that might be emphasized by a recapitulation.

1. The absence of menstrual flow throughout pregnancy. An irregular flowing following one or more periods of suppression of menstruation is the usual history.

2. Distinctness with which the fetal sounds could be heard. This was so noticeable as to cause comment by the attending physician.

3. Sprawled out appearance of the child, as shown by roentgen-ray.

4. Rapid recovery, with no absorption symptoms, by means of wide open drainage.

5. Complete and strong healing of the abdominal wound with no suturing. The right rectus muscle separating incision lends itself well to a firm closure under these conditions.

6. Slowness with which the circulation through the placenta was cut off. It was forty-three days from the death of the child until all blood vessels were closed and the circulation in the placenta shut off.

MYXEDEMA OF THE LARYNX

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The characteristic voice of myxedema, which the clinician has for a long time recognized as a feature of the clinical picture of that disease, has aroused but little interest on the part of the laryngologist. It may be because the laryngologic phase of the disease ordinarily does not predominate the clinical picture, and because the disease is usually recognized in its early stages and is promptly and successfully treated, that there is no exhaustive study of it from the point of view of the laryngologist. I am at present engaged in such a study, and would welcome any aid physicians might offer. Pathologic material—myxedematous and cretinous larynges—is especially sought for, but has not been obtained in sufficient volume.

The case here presented is of sufficient interest to warrant publication.

REPORT OF CASE

History.—A woman, aged 42, presented herself in February, 1923, with the chief complaint of orthopnea and a choking sensation in the throat, especially marked when lying flat on the back. Family history was of little interest. The father died of nephritis and the mother of pneumonia. Her previous history was limited to an operation for removal of fibroids of the uterus in 1910; the menopause came at the age of 35. The present illness dated back to 1913; since then the patient had had a thick voice and had been afflicted with intermittent hoarseness, unaccompanied by cough, which is especially marked in wet weather.

Early in January, the patient grew hoarser than she had been during the last ten years. This hoarseness persisted in spite of improvement in the weather, and steadily became more aggravated. She also was unable to sleep because of intense orthopnea and a choking sensation in the throat, most marked when lying flat on the back. Her condition grew progressively worse, until she presented herself for treatment.

Examination.—The patient was obviously acromegalic and moderately myxadematous. The weight was 190 pounds (86 kg.). The features were pallid and heavy; the size of the face and head were increased; the features were moderately prognathous; the hands were spadelike; there was hypertrophy of ears, nose and eyelids; the hair was coarse, dry, harsh and thickened; the tongue was greatly hypertrophied. There were fatty subcutaneous pads. The heart and lungs were negative. The general examination was otherwise of no special interest.

Laryngoscopic examination was rendered difficult by an extremely enlarged tongue that filled both mouth and pharynx. Below a large, well developed epiglottis was a mass of tissue springing, apparently, from the posterior wall of the larynx and the interarytenoid space, shutting off the view of the lower structures. This mass was deep red, and seemed to be ulcerated. Though it resembled tuberculous granulations and suggested the possibility of a neoplasm, a diagnosis rendered plausible by the similitude of metastatic glands offered in the submaxillary pads, the patient's appearance favored neither diagnosis. The sputum and Wassermann reactions were

negative. It was not found possible, because of the enlarged tongue, to obtain a piece of tissue for biopsy by either direct or indirect method.

Treatment and Course.—Thyroid therapy was resolved on; progressively increased doses were given, beginning with one-half grain (0.0324 gm.) of the dried gland once a day, up to 2 grains (0.13 gm.) of the extract three times a day. Within two weeks, the symptoms complained of disappeared completely. Laryngoscopic examination now showed a very large larynx, supermasculine in its proportions, set deep in the throat. The mucosa was thickened, of a lighter hue than normal, and coarsely plicated over the arytenoids and posterior wall. The left cord was hidden from view by a prolapse of Morgagni's sinus. Marked thickening of the laryngeal wall left a diminished lumen. Under continued thyroid therapy the tissue of walls and prolapsed ventricle dwindled, leaving a spacious glottis and supraglottic regions. When the prolapsed ventricle had become reduced to a minimal size, an attempt was made to remove the prolapsed tissue by direct and indirect methods. The size of the tongue, though considerably reduced, interfered with successful operation, and it was not deemed necessary to attempt to operate under general anesthesia or by laryngofissure, because the patient breathed unobstructedly. An interesting phase of the treatment was the steady improvement in volume of the voice, parallel to the diminution in size of the tongue, and in its pitch and timbre paralleled to the laryngeal improvement.

COMMENT

The improvement in the patient's condition is maintained throughout the period of thyroid therapy; but when occasionally it must be discontinued because of toxic manifestations, the patient's laryngeal condition relapses. The markedly hypertrophied lingual and faucial tonsils have been removed, in order to avoid irritation from those sources.

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LATE SERUM SICKNESS FROM DIPHTHERIA ANTITOXIN *

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In earlier days when diphtheria antitoxin was given in whole horse serum, serum sickness was rather common. Weaver,[1] in a series of 692 cases, reported serum disease in 31.1 per cent. of those in which antitoxin injections were given. He[2] later reported 27.1 per cent. of serum sickness in patients receiving the antitoxin refined according to Banzhaf's modification of Gibson's method, while Heinemann's method of further refinement gave serum reactions in only 8.4 per cent. of cases. Different lots of antitoxin vary in the reactions caused, but with the present refined antitoxin, there are probably not more than 10 per cent. of cases in any large series that would show any serum sickness. The majority of these are mild and consist of localized urticaria lasting a few hours, and do not cause much concern. The case reported here was of a severe type, and occasioned a great deal of anxiety for several days.

REPORT OF CASE

A woman, aged 26, had an acute pharyngitis with marked edema of the uvula of two days' standing. Because she had been intimately associated with cases of diphtheria, 20,000 units of refined diphtheria antitoxin was given intramuscularly, Aug. 20, 1923. She had had two courses of toxin-antitoxin (in May, 1921, and September, 1921), and was negative to the Schick test, Oct. 16, 1921, July 27, 1922, Feb. 3, 1923, and Oct. 1, 1923. Cultures from the nose and throat showed no diphtheria bacilli but numerous hemolyzing streptococci. The throat condition subsided with no early reaction to the serum aside from a slight rise in temperature a few hours after the injection.

August 24, there was a slight redness about the point of injection, and the patient felt slightly nauseated. The next day the urticaria increased slightly, and the patient lost her appetite. At about 5 o'clock in the afternoon of August 27, the patient began to have a generalized urticaria and was exceedingly uncomfortable. The eyelids and lips were swollen, the uvula was edematous, the urticaria covered the whole body, and the discomfort from itching became almost unbearable. She was nauseated and vomited almost continuously for several hours. About 8 o'clock the same evening, the patient sat up for a few minutes and went into syncope. The face became blue, the eyeballs rolled up, she frothed at the mouth, and the radial pulse could not be obtained. This continued for a few minutes, and the patient gradually regained consciousness in the prone position. Atropin and epinephrin were given hypodermically, and relieved the condition for about an hour and a half. The urticaria then began to return. Local applications of alkalis and urticaria lotions were of little avail. The only thing that gave relief was epinephrin. The dose was soon standardized to 10 minims (0.6 c.c.) hypodermically, and had to be continued every two hours for five days.

The second day of the urticaria the patient had joint and muscular pains so severe that active motion was impossible, and passive movement was very distressing. The joints most affected were the fingers, shoulders, elbows, back and knees. These pains were intense and continued almost unabated for two days, after which time they gradually subsided. Some lameness continued for more than a fortnight after convalescence. During the severe early part of the reaction the radial pulse was very weak and distant. The heart borders were unchanged, the rate regular but rapid, and there were no murmurs. The pulse varied between 90 and 130 during the entire period, being most rapid as the urticaria returned. The temperature varied between 99.2 and 103 F. The urine showed no change, and the bowels acted normally. The blood showed 18,100 leukocytes at the onset of the urticaria, with 72 per cent. of polymorphonuclears, 25 per cent. large lymphocytes, 2 per cent. small lymphocytes and 1 eosinophil.

On the fourth day of the violent urticaria the patient was considerably relieved by alkaline tub baths, but the wheals continued to reappear at regular intervals about one and one-half hours after hypodermic injections of epinephrin. At about 10:30 a. m., August 31, the fifth day of the reaction, the last dose of epinephrin was administered, and the urticaria did not return. The patient was weak and continued to have some joint pains for several days. She was discharged, September 8. When seen again, September 18, she was still having some muscular pains in the arms, but was able to work and showed no further untoward reaction.

COMMENT

We have become so accustomed to giving diphtheria antitoxin that little thought is given to the possible after-effects. It is customary to inquire whether the patient has had asthma or has had serum previously. It has been shown that asthmatic patients do not tolerate antitoxin well. A few have a known idiosyncrasy to horse serum, and these are always carefully desensitized. Aside from "hives" of unknown origin in 1920 there was nothing in this patient's history to indicate a hypersensitiveness of any kind.

There is a possibility that the antitoxin contained in the toxin-antitoxin mixtures may have sensitized her. These injections had been given about two years previously. We know of no cases reported of such sensitization.

A reaction of such severity usually comes on much earlier following antitoxin. The severe general urticaria here began seven days after the antitoxin injection. In time it was similar to the late reactions, but in severity it more resembled the early anaphylactic shock. The duration of five days was also rather unusual. Most of the late reactions we see last only from twenty-four to forty-eight hours, and have periods when the patient is fairly comfortable.

We could find no precedent for the continued administration of epinephrin. It has been used every hour or so for one or two days. In this case the only relief afforded was by the hypodermic injection of 10 minims every two hours.

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* From the Durand Hospital of the John McCormick Institute for Infectious Diseases.

1. Weaver, G. H.: Serum Disease, Arch. Int. Med. 3:485 (June) 1909.

2. Weaver, G. H.: Medical Report of Durand Hospital of the John McCormick Institute for Infectious Diseases for the First Five Years, 1917.

This was continued until the fifth day with no apparent deleterious effects.

The Schick test was negative before the reaction and remained so afterward, so that the antitoxin for diphtheria toxin remained unchanged by the serum sickness.

REPORT OF A CASE OF NONPARASITIC CHYLURIA WITH CYSTOSCOPIC FINDINGS

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Although a number of cases of nonparasitic chyluria have been reported within the last year or two, nearly all from European sources, it is still a condition rarely encountered, particularly in this country, and cystoscopic findings have been recorded in only a few instances.

REPORT OF CASE

History.—A woman, aged 23, single, born in Chicago of Polish ancestry, who had never resided elsewhere and whose family history was negative, noticed that, beginning at the age of 9, the urine had been of a milky color and consistency. This condition had been continuous except for a period of two weeks, about three years ago, during which time the urine was normal in appearance. When the milky urine first appeared, its onset was spontaneous and was not preceded by trauma, infection, or disturbance of any sort. Despite the peculiar appearance of the urine, the condition was practically symptomless. The patient had been in comparatively good health all this time. She was able to work and had had practically no urinary symptoms or distress. The patient noticed that she could control the character of the urine by the amount of food and fluid intake. After fasting from twelve to sixteen hours, the urine was often clear and apparently normal. Following large fluid intake, the urine was either clear or of light milky color. After lying in a reclining position for a few hours, the urine was often clear, irrespective of the food or fluid intake.

Cystoscopy.—The presence of chyle in the urine, accounting for its milky character, has been determined by a number of chemical and microscopic examinations. Numerous examinations were made. The first was about two years ago, when the patient was first seen, and the most recent examination within the last few months; in all, fifteen or twenty times. At times cystoscopy was impossible, for the bladder could not be washed clear, the chyle adhering to the bladder wall and plugging the instrument when irrigation was attempted. On other occasions, it was possible to wash out the bladder partly or almost completely so that inspection of the interior of the bladder could be made. Irrigation of the bladder, preliminary to cystoscopy, was always tedious, lasting from twenty to forty minutes, before the bladder was clean. At other times, after large fluid intake and reduced diet, the bladder was entirely clear and could be readily inspected. The findings on inspection of the bladder wall were at all times negative; there was no change from normal, and no pathologic condition could be found. Chylous urine could be observed, spurting intermittently from both ureteral orifices. At times only one side emitted chylous urine and the other side was clear. When the bladder urine was clear, the urine from the ureter was also clear.

Ureteral Catheterization.—Ureteral catheterization revealed nothing abnormal. The catheters often became plugged with the sticky chyle. Roentgen ray examination with catheters in place and pyelography revealed nothing abnormal. All the cystoscopic findings were negative.

COMMENT

In this case the cause for the disturbance lies undoubtedly in the kidney—some functional disturbance in which the lymph and chyle filtered through the tubules of the kidney without causing any damage. Marion's theory for the etiology of nonparasitic chyluria, that it is of renal origin and of a secretory nature, is apparently well borne out in this case.

In the case here reported we have a condition that is a pathologic curiosity existing over fourteen years and at no time producing any disturbance.

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Special Articles

HOSPITAL COSTS, PAST AND PRESENT

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The subject of hospital costs—i. e., cost of caring for patients—is such an involved one that, in discussing it, we must define sharply the types of hospitals under consideration. Costs in a private hospital with a large ward and private service, adequate facilities for the training of nurses, and large laboratories cannot be considered in the same light as the figures for a small hospital with few ward beds, and mostly small private rooms and private wards.

Although one might imagine that it should be an easy task to compare financial statements of various hospitals and from them obtain an estimate based on actual costs as to what a reasonable per diem charge should be, such is far from the case. Any one even casually examining a number of annual reports of hospitals will be struck with the fact that there is little, if any, basis of comparison. Apparently each hospital has grown up with the idea that its own particular method of bookkeeping and presentation of financial facts is either the best one or, at least, is best for its own particular needs. Not much is to be gained by a comparison of the figures of representative hospitals in order to determine why there are large discrepancies in hospital costs, and therefore in per diem charges.

On more careful investigation, we find that, in certain hospitals, charges which cover part of the every-day running expenses are paid through special funds, and these charges do not appear in the per capita costs. This is particularly true of funds for the support of pathologic and roentgen-ray laboratories, nurses' training schools, social service departments, linen and food supplies. In many of the hospitals conducted by Sisters, the item of expenses for salaries, compared to similar expenses in other hospitals, is very slight. The discrepancies briefly noted indicate the many difficulties one meets when trying to answer the question, which has been asked, "What should carry through a middle class patient without loss or profit to a hospital?" I do not believe that this question can be answered with any one figure or set of figures. It depends on the type of facilities and policies of the hospitals in question.

COST OF CARING FOR PATIENTS

In order that we may come to some sort of factual basis, it may be interesting to note that the United Hospital Fund of New York, whose constituent hospitals present to it similar financial statements, reports that for the year 1922 the average per diem cost for all patients cared for in eighteen general hospitals was $5.15, the highest being $7.75 and the lowest $4.10. In Chicago, taking two hospitals representing two distinct types, one a smaller hospital with a larger proportion of pay patients and the other a larger hospital with a larger proportion of ward patients, we find that their average per diem costs for the first ten months of 1923 was $5.00 and $5.87, respectively. The United Hospital Fund's figures are referred to particularly because of the general uniformity of the statistics of its hospitals. Here we find that the hospital with the highest cost had a daily average census of thirty

patients, and employed eighty-four persons, including nurses. This was approximately 2.8 employees for each patient. The hospital with the lowest per diem cost had a daily average of 280 patients and employed 421 persons, including nurses, or an average of 1.5 persons per patient. It would be difficult and unjust to say from a mere perusal of these figures that patients in the latter hospital did not receive as good care as those in the former, but it stands to reason that patients in the former hospital, all other things being equal, had a much better chance of receiving better care than those in the latter.

WHAT TO CHARGE THE PATIENT

It is instances such as these that make it so difficult to make a specific statement as to what is a fair per diem charge. What is considered a necessity in one hospital is considered a luxury in another. We are in much the same situation when we attempt to fix a fair charge for the rental of a certain sized apartment. We know that the costs differ markedly. We have to consider the neighborhood, cost of the building, furnishings, service, etc. In hospitals we have likewise to consider the type of building, the cost of its upkeep, the demands of its clientele and medical staff, and the hospital's conception of its duty to its patients, physicians and nurses. From the financial data at hand, no one is justified in saying that any certain figure is the proper one for per diem costs. If an average figure, such as the $5.15 mentioned before, was given, it would be eminently unfair to many hospitals. For instance, the hospital with the $7.75 per diem cost could not, in all probability, even begin to give the service it is giving and which it thinks it should give at the average figure, and the hospital with the per capita of $4.10 would be wasting money if it spent $5.15 for the service it gave.

We may grant that not all hospitals are perfectly organized and efficiently managed; but neither economic efficiency nor inefficiency can be proved for or against a hospital solely on the basis of its per diem cost. The type of service and the manner in which the hospital is giving that service must likewise be considered. The policy behind a hospital's service may be questioned, but the cost occasioned by that policy must be met.

INCREASING COSTS

One definite statement which may be made is that per diem costs are increasing in all hospitals. The assertion that hospital costs are reaching a stage at which they are becoming prohibitive for the so-called middle class person is constantly heard. We hear on all sides that one has to be either very poor or very rich in order to get adequate hospital care. Unfortunately, this is more or less a fact. Why is it a fact? In general, irrespective of the increase in cost of supplies and labor, the demands made on the hospital by modern medicine are increasing costs.

Up to the present, hospital endowment funds, when not utilized for laboratory purposes, have ordinarily been used for the upkeep of free or charity beds. It is for this reason that the poor have always been able to get adequate hospital care. We are just beginning to realize that something should be done for the very large class of persons just at or above the dependence line. It is just as worthy a philanthropy—and I say philanthropy in contradistinction to charity—to keep this large class above the dependence line as it is to take care of the perhaps larger class below the dependence line. The altruism of a community is to be measured by the number or by the influence of the socially minded individuals who constitute the community group. It is through the socially minded that community ideals are finally established. Communities in which such ideals have been established are attempting to secure endowments for this portion of the hospital's work with just as great zeal as they formerly applied to the attempt to secure endowments for free work.

The majority of the patients who are just above the dependence line cannot very well meet even the average per diem cost of $5.15, which was previously noted. When we consider this cost, we must remember that it is an average cost, and that it includes an average amount of special work, such as laboratory and roentgen-ray examinations; and, while the cost might be lower for those patients for whom little laboratory work is done in those institutions in which it is the policy to charge only for work done, the cost would be very much higher for those patients whose condition necessitates more laboratory work.

The United Hospital Fund's figures for 1912 showed that the average per diem cost for its general hospitals was $2.55, the highest being $2.80, and the lowest, $1.24. This is in comparison to the average figure of $5.15 for 1922, and the minimum and maximum of $4.10 and $7.75, respectively. The average figures show an increase of 128 per cent. in 1922 over 1912. Unfortunately, the statistics for 1912 did not show the average number of employees per patient. The general hospital in Chicago with the per diem cost of $5.87 for 1923 had a per diem cost of $2.49 in 1912, an increase of 136 per cent. in 1923 over 1912. A number of factors are involved in this increase.

First and foremost is the increased cost of labor and supplies. According to the index numbers of wholesale prices, costs in general in 1922 were 54 per cent. higher than in 1913. The increase in cost for labor is probably about the same. This increase, however, accounts for only about 50 per cent. of the 128 per cent. advance.

A statistical account showing the percentage of increases of wages in the various hospital departments would only be tiresome, but the following facts bear on increased hospital costs: The number of hospital employees has greatly increased. The community constantly demands, and the hospital attempts to give, more and better nonprofessional service to its patients; more records, professional and nonprofessional, have to be kept; the community is more anxious to know where and how the hospital spends its money; more telephone service has to be provided, and so on through a host of other details. One is often at a loss to account for the fact that, without any increase in the number of patients, clerical staffs increase decidedly in number in a period of a comparatively few years. It is apparently the tendency of the times. More information is demanded from the hospital, and the hospital attempts to give more service to its patients; and, in all probability, its employees, like most other persons in these times, are turning out less work per capita than formerly. We have a different social point of view concerning employees; hours are shortened and work is frequently lightened. This means more employees.

Social service departments have sprung up. These departments either did not exist at all ten years ago, or their cost was so slight as to be inconsequential. Now, practically every hospital has a large or small social service department, and the work is here to stay.

The same is true of dietetic departments. Formerly, some hospitals had dietitians who instructed their nurses. Now, large, well organized dietetic departments, with a large measure of control over all the food problems of the hospital, are accepted facts.

The laboratory personnel is increasing by leaps and bounds, as a result of the direct application to clinical medicine of recent advances which had their inception in the research laboratories. Details as to the mounting cost of this item would be superfluous.

Vast increases in expenditures have been necessitated through changes in our conception regarding the training of nurses. Among the changes we find better instruction, requiring more instructors; shorter hours, requiring more nurses; better supervision in accordance with our modern conceptions of education, and elimination of much of the housekeeping drudgery by the employment of ward helpers.

Better living conditions are provided for all hospital employees, and this includes better residences and better housekeeping facilities in these residences.

Paid resident physicians who supervise and instruct the interns have increased expenses incidental to intern service, as it is becoming more generally realized that interns are in the hospital for instruction rather than as elevated orderlies. With this conception, more and more routine work is being taken away from the interns and passed on to paid technicians and orderlies.

Adequate roentgen-ray departments have become more and and more recognized as being essential, and the increase in their size and corresponding costs is familiar to all. Electrocardiograph departments, with all their attendant expenses, have been established in the last decade.

In summing up the increases in labor, we not only have to consider that the absolute number of salaries has increased, because of the wider variety and more highly specialized kinds of work demanded of the present-day personnel, but also we must remember that, ten years ago, hospitals in general, with very few exceptions, were paying what might be considered starvation wages to most of the smaller number of employees which they then had. Their wages did not begin to approximate those for similar services in the commercial world.

It was perhaps the thought of the times that, as hospitals were in the majority of cases charitable organizations, their employees should contribute their bit to charity by working for wages which were markedly under the commercial scale, and in most cases dangerously near, if not under, the self-supporting level. One fortunate result of the war, as far as hospitals are concerned, was the fact that the labor shortage compelled them to bring their wage scale up to a level approximating that of commercial organizations. In most hospitals it still does not reach this level, and in those hospitals in which this approximation has been made in certain departments, it may still be wanting in others. It is interesting to note, in this connection, that for many years before the war it was customary to consider hospital expenses as being roughly divided into three equal parts: salaries, food, and supplies other than food. A rather recent bulletin issued by the American Hospital Association shows that these relationships have changed in the last few years. A number of representative general hospitals showed their expenses to be divided roughly as follows: salaries, 50 per cent.; food, 25 per cent., supplies other than food, 25 per cent. In other words, the salary item in the budget had increased form 33⅓ to 50 per cent. in a comparatively few years.

In the field of supplies, we find, in addition to the absolute increase in costs, a marked increase to expenses incidental to the establishment and development of all the activities enumerated above in the discussion of labor. In conjunction with this, we must consider that general standards of living have risen. Services are now rendered as a routine that were formerly only given in isolated instances. This is evident by a casual glance at the plans of any new hospital, irrespective of its size. We find individual lavatories; greatly increased toilet facilities; individual telephones; individual electric fans, and a host of other mechanical equipment. This mechanical equipment, in most instances, is not introduced to reduce labor but to give added service, and with each additional piece of equipment, we must remember that the cost of upkeep increases.

It is my feeling that the cost of hospital care has increased and will continue to increase regardless of the changes in the cost of supplies, because of the modern conception of the hospital as an educational institution as well as an institution purely for, one might say, the custodial care of the sick, a conception of hospitals that prevailed not so very long ago. I do not wish to be understood as saying that hospital costs should rise even in the face of marked declines in cost of commodities and labor, but that there will be a constant tendency for the employment of more people and the consumption of more supplies.

Another question that has been asked is the part, if any, played by the standardization program of the American Medical Association and the American College of Surgeons in increasing per diem costs. While attempts to meet the requirements of standardization will increase maintenance costs in the hospital that has been below standard, this will not be a factor in those hospitals which had already voluntarily met or exceeded those requirements before the standardization program became effective. There should be no increased cost involved in having a properly organized staff, which holds monthly meetings and which does not split fees. With or without standardization, no hospital is justified in continuing without adequate laboratory facilities and adequate records. The minimum requirements called for in the standardization program, with the exception of monthly staff meetings, cover only those practices which, in all well regulated hospitals, have been in existence for a considerable period of time. Most of these hospitals have developed many more details and intricacies of service than are outlined in the standardization program.

Comments relative to economy and waste in hospital management, while interesting, need not concern us in a discussion of the more fundamental factors that have had a part in increasing hospital costs. It is of much greater moment for medical staffs to interest themselves in, and to aid the broad development of the hospital in order that it may advance along the proper lines in the care of its patients, in the education of its personnel, and in the development of the proper community thought concerning it, than it is for them to dissipate their efforts in discussing the relative merits of washed and unwashed gauze, liquid and solid soap, and other more or less important items of hospital economy. These, while important, should not take up the time of medical staffs until the other more general and fundamental things have been accomplished.

Michael Reese Hospital.

EFFICIENT LABORATORY SERVICE IN A HOSPITAL OR A COMMUNITY*

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It is a fact well known and generally admitted that, in practice, laboratory work is about the most badly neglected phase of general medicine. And the reason for this neglect of a highly perfected and valuable means of diagnosis is purely, or largely, economic. Especially is this neglect the case as regards the great middle class—the bone and sinew of our population. The poor person who goes to a clinic or a hospital has his case fully worked up, from the laboratory standpoint. Expense is not allowed to stand in the way, though this expense must be shouldered, not by the individual himself, but by the endowed institution, the hospital. The very wealthy, too, get all the laboratory work desired by the physician, for in their case the matter of expense need not be considered. But for the great majority of people paying their way through life, to whom money means something, adequate laboratory work is practically ruled out unless the physician suspects some condition that demands the use of some laboratory test. In other words, the physician is unwilling to subject his patient to what he fears may prove an unnecessary expense.

So it happens that the great majority of the sick public, and a vast majority of physicians in private practice, are debarred from the undoubted benefits that would accrue to them from the same unlimited clinical pathologic work that is available for the very rich and the very poor. Laboratories maintained by city and state do much to help, as far as urgently needed work is concerned, but, of course, can hardly be expected to furnish the exhaustive routine tests and examinations that so often promise nothing and yet so frequently yield totally unexpected and most valuable light on a case. They are nothing like the valuable agency that a local laboratory could be in a community, if such a laboratory could be maintained and operated in such a way that every physician could use it to an absolutely unlimited extent for all of his cases, without a thought as to whether a given patient could pay, or should be asked to pay, even a minimum fee.

Every community, then, it is fair to say, should have its own laboratory. There is no one who will care to take the negative on such a proposition. And every community *would* have its own laboratory were it not that the financing of such an institution has, in most places, appeared an insuperable obstacle. But many communities, it may be urged, are too small to need a laboratory, and yet hardly any town or village is so small but that it could employ to advantage the full time of a laboratory worker, if all the pathologic work needed could be done, as suggested above, without the element of cost coming in at all; for routine examinations, such as one might desire but would never care to insist on having, are always of value, even if only of negative value; and when a positive is accidentally stumbled on in such a routine (sugar in urine, for instance, or positive Wassermann reaction), the advantage is incalculable.

One of us has worked out a solution of the laboratory problem which has met with success in a practical way, as is demonstrated by its use in a city of this state during the last few years. This method has been applied successfully in this case to five hospitals and medical groups in one city, and to other hospitals in adjacent cities.

First, a home, or central, laboratory was established which is unusually well equipped for all conceivable branches of clinical pathology, both the well known, proved, "practical" work and, as well, the newer, not yet generally accepted, work that is so fascinating because of the potentialities of good that may come out of some of it, in the hands of conscientious clinicians.

For a number of years we have been training young women to become efficient laboratory technicians. This course is rather an unusual one. In the first place, the young women selected are of an unusually high type—all high school graduates, some college graduates, most of them planning to make some form of laboratory work their career.

The first few weeks of training are spent in mastering the mechanics of the various laboratory procedures. Take, for instance, blood counting. A new assistant is not allowed to look at blood under the microscope until she has learned by innumerable trials to draw the blood up to the exact points on the counting pipets. In fact, whole days are spent in filling pipets to the required marks and then emptying them to clean and refill. On an average, a new assistant fills a hundred or more pipets each day. Only after she has acquired the mechanics of this procedure is she allowed to place the blood on a slide. The same repeated routine applies to the counting of the blood; also to all of the many other more or less difficult methods used in a clinical laboratory.

At the end of her course, such a girl with such a training has had more experience in the actual doing of all the routine laboratory procedures, as well as more intensive study in the theory of clinical pathology, than any recent medical graduate could ever hope to have; and this is as it should be, for with the medical curriculum packed with indispensables, as it is today, it is no more important that the practicing physician should be able to run through the technical details of basal metabolism or blood chemistry than it is for him to be able to make up a hospital bed with the neatness and trimness demanded by the head nurse of a surgical ward.

At the end of one year, such a girl knows not only what she does know and can be depended on to use when needed, but—far more important and valuable—she knows her own limitations, and does not hesitate to ask for assistance when and where she needs it, and to turn over in toto work for which she is not fitted.

With the aid of this staff of personally trained assistants for whose work we hold ourselves personally responsible, we are today supplying laboratory service to five hospitals and medical groups in Charlotte, and to some others farther away. It has been found that one of the more advanced of these technicians, working on salary for her full time, in one of the very complete practical little branch laboratories, situated in each of the hospitals or medical buildings that they serve, can do as much routine laboratory work as a dozen men are likely to call for. At the same time, she serves as a collector and forwarder of material to be sent in to the central laboratory in more difficult procedures, such

* Read before the North Carolina Hospital Association, November, 1922.

as blood for blood chemical examinations or the Wassermann test, tissue for examinatoin, or doubtful malarial slides. The most advanced of all the technicians are kept in the home laboratory for conducting the advanced work under the immediate personal oversight of the pathologist, as well as for helping him in the teaching of recruits. The least experienced are also kept here for training and for doing routine work under supervision. Those capable of working alone, with only occasional oversight and able to be trusted to know their own limitations, are used for staffing the branch laboratories.

It has been found that such a service can be rendered to a group of physicians who are near enough to one another (either in hospital or sanatorium, or in office building or neighborhood), physically, to be served by one person, for approximately $250 a month, or even less, varying somewhat in specific instances. This expense, or budget, is thus disbursed as follows: technician's salary, $125; running expenses, $75; nominal fee to director, $50. One of the essential features of this plan is that the individual physician shall not be limited in either quantity or variety of work that he can have done. On the contrary, he is constantly to be shown where some new or unthought-of test or procedure might possibly throw light on this case or that. In other words, the physician must be trained to think in terms of the laboratory, and consider himself absolutely untrammeled in his use of its facilities.

To make all this concrete, let us assume, for example, that a group of twelve men occupy a small medical office building. They pay $250 a month, apportioned as suggested above. At the end of each month, a dummy charge sheet is prepared, charging against each man (simply for the sake of determining the percentage of benefit derived by him and hence the fraction of the $250 he should be responsible for) the regular customary fee for each laboratory procedure done for him—whether he has charged his patient for it or not, in any given case. Let us suppose that a thousand dollars' worth of work has been ordered and performed, taking in all work done and estimating it at current rates. Suppose that two of our twelve men, who constitute a very active, busy surgical team (or, perhaps, a diagnostic firm), have had one half of the total work done to their order. They will be responsible for $^{500}/_{1000}$ of $250, or $125. Of the remaining ten men, perhaps, four will have ordered a hundred dollars' worth each; their share of the monthly expense will be $^{100}/_{1000}$, or $25 each. Of the remaining six, one man may have had no work done at all, if such a man can be conceived of. The other five men will each be charged his proper proportion of the $25 left unprovided for, an average of $5 apiece.

CONCLUSIONS

A complete and exhaustive laboratory service is possible for any hospital, sanatorium, medical building or neighborhood group, on terms that make the project finance itself and add no overhead to any physician and impose no burden on any patient. The essentials are:

1. A central laboratory under the highest grade pathologist obtainable. This must be equipped with every facility for anything and everything conceivable in clinical pathology. This constitutes at once a court of last resort for difficult procedures and a training school for technicians.

2. As many branch laboratories as there are medical groups to be served, each under a well trained, skilled technician who knows (*a*) how to do all routine laboratory procedures, and (*b*) her own limitations and when to defer to higher authority in the central laboratory. Such a laboratory should be equipped to do all routine work, such as urine, blood, stool, sputum and stomach contents. It should collect these whenever necessary and also blood for Wassermann tests, blood chemical examinations, Widal tests, etc.

3. Three classes of technicians: (*a*) probationers and first year workers learning their trade and doing routine work, under supervision, in the home laboratory; (*b*) second year technicians operating the branch laboratories, under such occasional supervision and inspection as will be necessary in order that the pathologist may be able to vouch personally for every bit of work done by them; (*c*) advanced workers who carry on the difficult procedures in the home laboratories and assist the pathologist in the training of the younger workers.

4. A group of a dozen practitioners who will call for everything conceivable, on all their patients, irrespective of the probability of its being of value in any given case and with no consideration of its cost, knowing that the technician's time is paid for anyway, and that she might much better be doing laboratory work, whether useful in a given case or not, than reading a magazine or sitting idle.

5. A method of financing that imposes no burden on any one, on the known principle that quantity or capacity production of laboratory work is only a tithe of what laboratory procedures, as commonly ordered, are charged for.

Such a unique laboratory service as this has made the practice of the specialty of one of us, general and preventive pediatrics, a joy never before experienced; and it is presented before this body with a firm belief that there are many men here who will not longer be willing to be deprived of such a benefit, when once they know how simple a matter its attainment can be made.

THE STUDENTS' UNIT MEDICAL LABORATORY

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Within recent years, considerable interest has arisen regarding the correlation of the physical aspects of the medical school building with the problems of teaching medicine. Various attempts to solve these problems have been suggested by Dean Meader,[1] of the University of Colorado School of Medicine, and Dean Robinson,[2] of the Vanderbilt University Medical Department. The essential point of both these plans has been the attempt to bring about a closer relation between the laboratory work and the clinical work.

The problems of medical education have been discussed in a series of three papers[3] in a recent issue of THE JOURNAL. It is the general consensus of the

1. Meader, C. N.: The University of Colorado School of Medicine and Hospital, J. A. M. A. **81**: 234 (July 21) 1923.
2. Robinson, G. C.: The Relation of Medical Education to the Medical Plant, J. A. M. A. **81**: 321 (July 28) 1923.
3. Bevan, A. D.: The Revision of the Medical Curriculum, J. A. M. A. **80**: 1187 (April 28) 1923. Witherspoon, J. A.: Medical Education, Past and Present, ibid. **80**: 1191 (April 28) 1923. Clarke, W. C.: Analysis of Methods of Modern Medical Education, ibid. **80**: 1195 (April 28) 1923.

authors of these papers that this correlation between the laboratory work of the first two years and the clinical work of the last two years is an absolute necessity. The architectural attempts that have been made to bring about a closer physical contact between the laboratory work as conducted in the medical school building and the clinics as established in the teaching hospital have resulted in a partial solution of this problem. It seems, from the sketches of proposed new medical school buildings, that a still closer union is to be brought about between the teaching hospital and the students' laboratories. This is a desirable thing. But it has its limits, and these seem to have been reached in the development of the University of Rochester Medical School. As Dean Bardeen [4] has pointed out, the danger here lies in overemphasizing the scientific aspects of medicine, in making the teaching hospital merely a students' clinical laboratory, and in neglecting the art of practicing medicine, which can be gained only by serving an apprenticeship under a master of the art.

PROBLEMS OF ADMINISTRATION

There are, however, certain problems in the administration of the first two years of laboratory work which are of vital interest to teachers and to the students of medicine. These problems are dependent on the method of teaching and on the equipment in the laboratory. One such fundamental problem is concerned with the personal contact between the teacher and the student. The tendency seems to be to reduce the number of students to a minimum; and yet, in the medical school itself, this does not solve the trouble. The students are herded together in the lecture room and in the laboratory; their work is explained to them in bulk; and, apart from individual quizzes, which are designed more for the purpose of accurate grading than for the purpose of gaining knowledge on the part of the student, or of gaining an insight into the student's needs on the part of the instructor, there is little intimate contact between teacher and student.

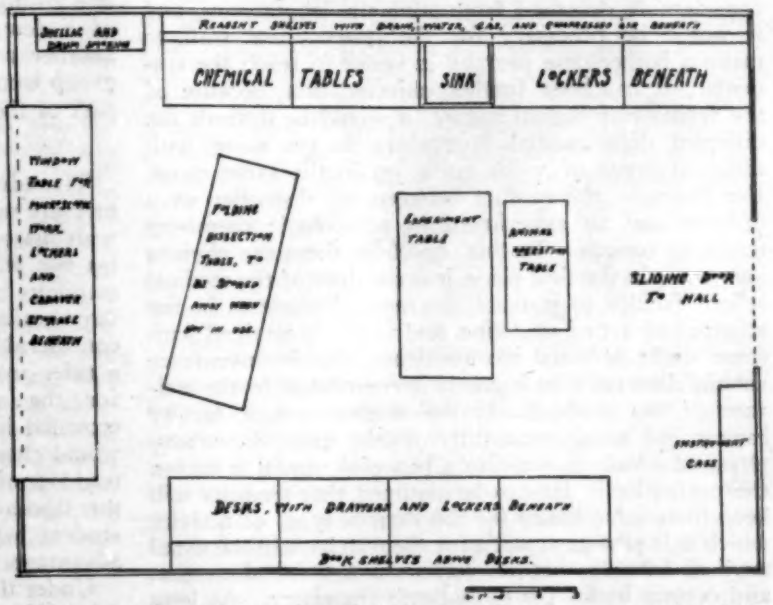
A second fundamental problem concerns itself with the student and his own efforts. It is seldom in a medical school that the medical student has a nook or corner of his own where he may keep his books and where he may do his studying. It is necessary for him to carry a large number of books from his rooming house to the school, and between classes he has to take a journey, often of several blocks, back to his room in order to collect more books or to return those with which he has finished.

A third fundamental problem is concerned with the methods by which students have been prepared to become fit to practice medicine. These methods, according to Clarke,[5] may be divided into four groups: First, in which the student attends passively, is constantly guided, and is dependent on the experience of others; this method follows the lecture, assigned textbook study and laboratory demonstration or clinical presentation. Second, in which the student both listens and talks; this method uses the quiz or conference or the discussion. Third, in which the student observes, reports and discusses; this method uses experiments and cases in the dissecting room, laboratory and clinic. Fourth, in which the student takes the entire responsibility; this method follows the "honors system" in vogue in English universities, and puts the student on his own initiative with regard to experimentation, reading and investigation.

It is hardly desirable that any one of these methods be followed in its entirety alone. There are certain advantages and disadvantages in each. It should be the object of the medical school faculty to combine these methods in such a way as to preserve all their advantages and to lose all their disadvantages.

THE STUDENTS' UNIT MEDICAL LABORATORY

As a suggestion for the means of solving these problems, the idea of a students' unit medical laboratory is proposed. According to this scheme, a small convenient number of medical students—say four—would be placed together in a room of convenient size, approximately 15 by 20 feet (for four students), and this room would belong to them during their year's work. It would contain a locker for each student, a desk and chair, with a bookcase, for each student, a chemical desk with reagent shelves and sink along one side, a window shelf for microscopic study, and such accessory furniture in the way of dissecting tables or experiment tables and equipment lockers as may be necessary. Twenty-five such rooms on one floor, combined with a general overflow room where hoods, sterilizers, incubators, refrigerators and balances could be provided, and where students could be called together for a general conference on their work, would provide accommodation for the average sized medical class. Such differences in the room equipment as would be necessary for the work of the first or second year could easily be arranged.



Floor sketch for students' unit medical laboratory planned to accommodate four students; size 15 by 20 feet.

It is a matter of opinion whether the students in such a system should be grouped according to classes, or vertically—that is, say two members from each of the four medical classes to form a group of eight. There

4. Bardeen, C. R.: Present Ideals of the Physical Plant in Medical Education, University of Wisconsin Medical Society, Nov. 15, 1923.
5. Clarke, W. C.: Analysis of Methods of Modern Medical Education, J. A. M. A. **80**: 1195 (April 28) 1923.

is no doubt that instruction would be easier if the group were all from the same class, but from the student's point of view there would be many advantages in mixing men from different classes in the same group. Not only would constant review be afforded the more advanced men, but a certain control and anticipating guidance would be exercised over the younger students. It is difficult, however, to attack the American system of scholastic class unity, and when it was attempted by Woodrow Wilson at Princeton, it failed.

This plan may be considered briefly by pointing out its objections, on the one hand, and its advantages, on the other. The objections to it have been gathered in conversation with medical school professors and students, and these may be considered first.

OBJECTIONS

First, it is claimed that it would lead to a great inconvenience for the faculty members. It would be necessary for departmental offices and research rooms to be considerably detached from students' laboratories, and it would be necessary for the instructional staff to make a bothersome journey in order to reach the students. It has been further objected that, because of the frailties of human nature, it would be difficult for different departmental instructors to get along with different types of work going on in the same room. For example, the conflict between the dissection of a cadaver and an experiment in physiologic chemistry might be serious. To this objection, there are obvious answers. In the first place, it is the duty of the medical school faculty to instruct the medical students in the science and art of medicine, and if this is attained with some slight personal inconvenience, this inconvenience should cheerfully be borne if it contributes to the welfare of the student. If the medical school faculty cannot get along peacefully within itself, how may physicians look forward to a peaceful condition within the profession? It is to be assumed that students will keep their same hours for the various types of activity which it is now customary for them to have in the usual medical school; that is, certain hours for dissection and certain hours for physiologic chemistry. As long as there is no time conflict, there should be no equipment conflict.

As a second objection, it has been stated that this plan would produce an excessive wear and duplication of equipment. It has been pointed out, for example, that the exposure of microscopes to strong acid fumes would be very harmful to the microscopes. The answers to these objections are also more or less plain. There would be no more duplication of equipment than there is at present. Indeed, the tendency would be for a reduction in the amount of equipment since, for example, the same chemical reagents could serve for both physiologic chemistry and clinical laboratory diagnosis, and the same kymographs could serve for both physiology and pharmacology. If a reasonable amount of care were exercised by the students with regard to their equipment, such as is customarily demanded under any system, it would not seem that there would be any excessive wear on them.

In the third place, it has been objected that it would not be a pleasant thing to work constantly in a room in which anatomic dissections were being performed. The objection here is based chiefly on the odor. It has been reliably stated, however, that such odors as may be found in a dissecting room are unnecessary and, with proper means, may be entirely dispensed with.

In the fourth place, the objection may be made that there would not be as adequate supervision of the work of the students under such a system as in the present method, in which the students are all together in one laboratory. To this, it may be replied that it is often more desirable for the student to be independent of constant supervision than to rely too much on it. It has been constantly asserted that physicians should be trained to rely on themselves in any emergency, and that their initiative and independence should be developed to the utmost.

As a final objection to the students' unit medical laboratory, it has been stated that such a scheme would require the services of too many instructors. This does not seem to be a sound objection in view of the fact that, in the present system of laboratory work, three or more instructors can safely take care of the work of 100 students, and it is necessary for them in doing this to pass from one student to another or from one group to another. It would seem that the addition of a few more steps in passing from one room to another room instead of from one group to another group would necessitate only a little more effort on the part of the instructional staff.

ADVANTAGES

The advantages of the students' unit medical laboratory are many. In the first place, it provides a student with his own office and workshop, which is ready for his use whenever he wishes to use it. This is a tremendous boon for the medical student. Our present-day standards require the use of many books and of a considerable amount of office work. The schools, as a rule, provide no place for the making of reports or for the studying of reference books, apart from crowded library facilities. There are few of us who would choose to work in a library reading room if we could work at our own private desk. The fact that the laboratory would be open for use whenever the student wished to work in it would be a decided advantage.

Under the present system, the laboratories are locked up between certain hours; and, if the student wishes to work over a certain phase of his study or to attempt advanced or independent work, it is impossible for him to do so without making elaborate arrangements through the departmental offices. One of the greatest needs that the medical student feels in the present school system is a place that he can call his own, where he can study, where he can discuss with his friends the work that he is doing, or where he can collect such books or references or notes for his work as may be convenient. The advantage of having this in close proximity to the actual work instead of at a crowded dwelling or fraternity house some blocks from the medical school is apparent on the face of it.

In the second place, the students' unit medical laboratory would tend to stimulate student research and investigation. If a questionable point arises which is not covered by a lecture or by the routine laboratory procedure, the student has the equipment at hand for testing his views. Medical students are generally in the class of mature graduate students, and with the tendency of entrance requirements to become more exacting with respect to the possession of a bachelor's degree, or at least three years of collegiate training before entering the medical school, this maturity of medical students will become increasingly assured. The medical student

should become more and more accustomed to independent thinking, and whatever may contribute to the functioning of his creative intellect should be heartily encouraged.

Nothing has contributed more to the superior excellence of English scholarship than the working out of the so-called "honors system," in which the student is left practically to his own resources to get the information required of him in oral examination. For an American adaptation of this, the success of the preceptorial scheme at Princeton University is a striking example. It would seem that, in the profession of medicine, such an idea should prove to be particularly valuable, encouraging, as it does, the initiative, independence and self-reliance of the medical student.

One of the objections that has been raised by Clarke [5] to the present-day system of medical education is what he terms departmental barriers. He says:

> Interdepartmental partitions which are the inheritance of tradition and custom are distinct barriers to coordination. The term physiology, pathology, medicine and surgery suggest that they are subjects apart, while in reality physiology and pathology shade by insensible gradients into each other, and again into medicine and surgery. All of these rigid interdepartmental partitions are imaginary, and the present custom of departmental education in medicine tends to separate teachers, both by a physical living apart and by mental discord, because of certain tenets and purposes.

It is believed that the students' unit medical laboratory would bring about the desired closer correlation of the students' medical work. In view of the fact that all his laboratory studies, such as anatomy, physiology, histology, physiologic chemistry, pathology, pharmacology and bacteriology, would be performed in the same room and with the same men as helpers, and with all his textbooks and equipment and notes close at hand, it would seem that the laboratory work of the first two years would assume a more coordinated whole and that the bearings of each subject to medicine as a whole and to the other laboratory subjects would be made more clear. In this way, a more practical outline of medical problems as such would be presented to the medical student.

A serious drawback of our modern medical education is the fact that the teachers often are forced to regard their classes as a whole and to deal with them as a group rather than as individual men. Our system of lecturing, grading and, in fact, all our medical standards are applied to the medical students as a group rather than to the problems of each individual person. It is a common experience for medical students, when herded together in a large group, in, say, a physiologic laboratory, to perform their experiments as quickly as possible and often simply for the purpose of attaining a satisfactory grade. One cannot help but be impressed with the ideal that in a students' unit medical laboratory with four students working together, there would be a closer attention paid to the particular problem to be worked on by the group, and that a much closer contact between instructor and the individual student would be effected. In dealing with a large number of students in a large laboratory, it is very easy to fall into the habit of addressing the class as a whole and of neglecting the personal contact with the individual student. If, on the other hand, the instructor were forced to meet only four students in a small room, it would be necessary for him to adopt a more personal attitude toward the individual student.

Finally, there is an advantage in the use of the students' unit medical laboratory in the saving of space and in economy of equipment. It has been figured that the saving of space would amount to one third of the present space which would have to be devoted to the laboratory facilities of a two year school of 100 students in a class. A little mathematics will make this clear. Let us assume that the average sized working laboratory for 100 students is approximately 60 by 75 feet. Then, such a laboratory would be necessary for each of the following subjects, as represented at the University of Wisconsin: gross anatomy; histology, pathology and neurology considered as one; bacteriology; physiologic chemistry, and physiology and pharmacology considered as one. This would make a total floor space of 22,500 square feet. Even with this space reservation, certain classes, such as those in physiologic chemistry and physiology, find it necessary to operate in two sections, using the laboratory at different times.

Now, let us assume that the same 200 students are to operate under the students' unit medical laboratory plan. This would require fifty rooms, each 15 by 20 feet, which would give a total floor space of 15,000 square feet. Then, in addition, there could be a great economy in the use of equipment. With a single general storeroom, which would serve for the entire medical school, instead of separate departmental storerooms, it would be possible, for example, to avoid the duplication that is necessary at the present, such as when practically the same equipment serves for both physiology and pharmacology, or for both physiologic chemistry and clinical laboratory diagnosis.

CONCLUSION

Such a scheme as the students' unit medical laboratory has been successfully worked out, in part, by the anatomy department of the University of Wisconsin, and it is the opinion of both the students and the instructional staff of this department that the system works to a greater advantage than if the students did all their dissecting together in one large laboratory. A proposition such as this would require careful thought and consideration before being applied in practice, in view of the fact that the expense of effecting a change would be very great.

Since many medical schools are making plans for new laboratory buildings and changes in the methods of teaching of the students of the first two years, it is suggested that this plan of the students' unit medical laboratory be given fair consideration and, if possible, fair trial.

Restriction of Alcohol and Cirrhosis of the Liver.—The Danish law which makes the price of strong liquor a prohibitive price has now been in force for five years. THE JOURNAL mentioned, Dec. 1, 1923, p. 1916, Krabbe's figures showing that delirium tremens has dropped from a maximum of 447 annual cases in the period 1903 to 1916 to nine in 1918 and eighteen in 1922. Jacobsen gives a similar study of cirrhosis of the liver, since the law went into effect, in the *Ugeskrift for Læger*, March 1, 1923, p. 152. The number of cases per thousand hospital patients has dropped from 13.9 in 1912 to 3.8 in 1921, but the most striking change is that none of the cases in these later years are in persons under 40. In 1912, 10.5 per cent. of the cases of cirrhosis of the liver were between 20 and 30; 15.7 between 30 and 40, and none over 70. In 1922, there were 27.3 per cent. over 70 and none under 40. A few cases of acute atrophy of the liver and of "arsphenamin jaundice" have been observed, which previously were quite exceptional.

HOSPITAL SERVICE IN THE UNITED STATES

THIRD PRESENTATION OF HOSPITAL DATA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

In the following pages are presented statistics in regard to hospitals that are known to exist in the United States. As shown in Table 1 there are now 6,830 hospitals which have a total capacity of 755,722 beds which are occupied on the average by 553,133 patients. The figures are given by states so that the supply of hospital facilities for each state may be noted. Of the 6,830 hospitals there are 1,324 which have over 100 beds each, 1,072 hospitals have between fifty and 100 beds each, and 1,632 hospitals have between twenty-five and fifty beds each. This makes a total of 4,028 hospitals of more than twenty-five beds each with a total capacity of 715,729 beds which are occupied on the average by 531,024 patients. There are 2,112 hospitals that have from ten to twenty-five beds each, with a total capacity of 36,514 beds occupied on the average by 20,269 patients, and 619 hospitals that have less than ten beds each with a total capacity of 3,479 beds which are occupied on the average by 1,846 patients.

Years When Hospitals Were Established

Table 2 shows the numbers of hospitals now existing which were organized before 1900 and the numbers organized in certain periods since that time. Reliable figures by which the increase in hospital facilities can be measured are available only since 1906, with the material published in the first edition of the American Medical Directory. For hospitals existing prior to that time the data are not so complete. Of the 6,830 now in existence, however, data have been obtained, giving the years in which 6,331 were established. Table 2 shows that 2,419 were established prior to 1900; that 1,651 were established between 1900 and 1910—a decade of unprecedented growth; 1,584 were established between 1910 and 1918—the pre-war period, and 677 were established during the last five years, or since the World War.

Increase Graphically Shown

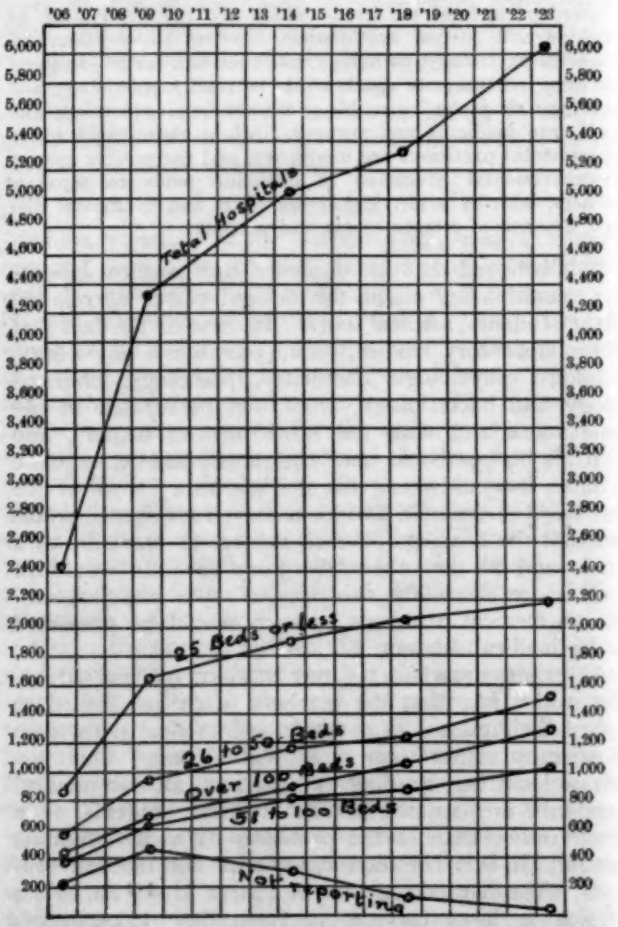
The rapid increase in the number of hospitals since 1906 is shown graphically in Chart 1. The top line shows the increase in all hospitals. There was an increase in the total number of hospitals from 2,411 in 1906 to 4,359 in 1909; 5,037 in 1914; 5,323 in 1918, and 6,063 hospitals in 1923, which with the 767 hospital departments make a total of 6,830. The figures for 1906, 1909, 1914 and 1918 are from the editions of the American Medical Directory for those years. For 1923 the figures are from the latest and more complete data on file, including 767 hospital departments of institutions which were not included in the data for previous years. The largest number of hospitals has been the group with less than twenty-five beds each. The number of these has been increased from 854 in 1906 to 1,626 in 1909; 1,890 in 1914; 2,030 in 1918, and 2,173 in 1923. The second largest supply is of the hospitals having between twenty-five and fifty beds each, the increase being from 555 in 1906 to 941 in 1909; 1,161 in 1914; 1,207 in 1918, and 1,511 in 1923. Of the hospitals having between fifty and 100 beds, there were 383 in 1906; 608 in 1909; 811 in 1914; 855 in 1918, and 1,032 in 1923. Of the hospitals having more than 100 beds, the increase was from 409 in 1906; 676 in 1909; 875 in 1914; 1,063 in 1918, and 1,308 in 1923.

The last line in the chart shows how data obtained from hospitals have been more complete with each subsequent survey. As we go to press the answers from hospitals in regard to capacity are complete except from thirty-nine institutions.

Agencies Maintaining Hospitals

The hospitals in the United States are maintained either by governmental agencies such as federal, state, county or city, or non-governmental agencies, such as churches, fraternal orders, industrial agencies, individuals, partnerships, local hospital associations, or other miscellaneous organizations or corporations. Table 3 shows the number of hospitals maintained by each of the governmental agencies, together with the total bed capacity of each group and the total average number of beds in use. Here again the figures are given by states so that the supply of hospitals in each state may be noted. Altogether there are 1,736 hospitals under government control of which 601, the largest portion, are under state control, followed by 465 county hospitals, 415 city hospitals, 220 hospitals under federal control, and thirty-five under joint city and county control.

Chart I.—*Increase in Number of Hospitals Since 1906*


'06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 '20 '21 '22 '23
Total Hospitals
25 Beds or less
26 to 50 Beds
Over 100 Beds
51 to 100 Beds
Not reporting

	1906	1909	1914	1918	1923
25 beds or less	854	1,626	1,890	2,030	2,173
26 to 50 beds	555	941	1,161	1,207	1,511
51 to 100 beds	383	608	811	855	1,032
More than 100 beds	409	676	875	1,063	1,308
Capacity not reported	210	506	300	166	39
Total	2,411	4,359	5,037	5,323	6,063
Hospital departments in 1923					767
					6,830

The capacity of hospitals under governmental control is 471,948 beds, or 62.4 per cent. of the entire bed capacity in the United States. Furthermore, the average number of beds occupied by governmental hospitals is 374,754, or 67.8 per cent. of the total average number of beds occupied in all hospitals. This shows the large share of hospital work carried on by governmental agencies. It must be remembered, however, that federal, state and county hospitals include most of the insti-

tutions which provide largely or entirely for the custodial care of incurable patients, or those having chronic diseases. Many of the patients in these hospitals also are either indigent, or are employees, or otherwise beneficiaries of the government. The large majority of patients having acute diseases are cared for in the nongovernmental hospitals.

The national government long ago established its own hospitals for the sick among its employees, soldiers, beneficiaries and dependents, since other hospitals were seldom available.

The hospitals maintained by the states are largely for the care of indigent chronic cases such as the crippled, the insane, and the tuberculous. In recent years there has been an national government. Every state except Delaware and West Virginia has some kind of federal hospital located in it. The comparatively large numbers of such hospitals in Arizona, California, New Mexico and South Dakota are due to Indian hospitals on the reservations in those states. Occasionally federal employees or beneficiaries are cared for by contract in hospitals maintained by nongovernmental agencies.

STATE HOSPITALS

The hospitals maintained by states number 601, which have altogether 302,208 beds occupied on the average by 261,840 patients. State hospitals, therefore, furnish 40 per cent of all

TABLE 1.—*Total Hospitals by States—Giving Number, Bed Capacity and Daily Average Number of Patients*

Marginal Number	State	Less Than 10 Beds			10 to 25 Beds			Over 25 Beds			Totals			Marginal Number
		Hospitals	Beds	Average Patients	Hospitals	Beds	Average Patients	Hospitals	Beds	Average Patients	Hospitals	Beds	Average Patients	
1	Alabama	6	40	19	28	499	271	47	6,161	4,295	85	6,700	4,585	1
2	Arizona	5	34	9	22	382	232	35	3,362	2,224	66	3,778	2,465	2
3	Arkansas	4	24	12	19	329	165	37	4,832	3,490	62	5,185	3,667	3
4	California	30	214	113	177	2,967	1,600	219	36,231	26,391	434	39,382	28,103	4
5	Colorado	9	64	40	41	701	426	63	10,902	7,861	113	11,667	8,327	5
6	Connecticut	7	39	22	20	309	243	55	11,596	9,460	86	12,004	9,725	6
7	Delaware	1	5	3	3	58	35	9	1,063	783	15	1,126	821	7
8	Dist. of Columbia	6	27	13	9	155	90	22	9,157	7,001	39	9,339	7,104	8
9	Florida	7	38	21	23	438	211	31	4,380	3,122	62	4,856	3,354	9
10	Georgia	13	70	42	21	368	174	57	9,074	7,121	92	9,512	7,337	10
11	Idaho	8	53	31	24	398	223	21	2,172	1,575	53	2,623	1,829	11
12	Illinois	34	171	75	92	1,623	743	270	50,678	31,463	396	52,472	32,281	12
13	Indiana	22	116	63	58	906	533	97	17,018	12,481	179	18,100	13,077	13
14	Iowa	23	152	62	74	1,175	586	108	14,882	11,457	201	16,209	12,105	14
15	Kansas	12	66	34	62	1,121	588	73	9,743	7,417	149	10,930	8,039	15
16	Kentucky	6	36	19	49	824	431	62	10,237	7,829	121	11,097	8,279	16
17	Louisiana	5	26	15	28	481	301	44	8,745	6,984	80	9,202	7,300	17
18	Maine	16	78	48	22	362	205	40	5,028	3,585	78	5,468	4,138	18
19	Maryland	13	54	26	25	447	267	75	14,302	10,337	113	14,808	10,652	19
20	Massachusetts	30	156	102	103	1,837	1,119	191	41,493	33,744	324	43,486	34,965	20
21	Michigan	12	120	76	97	1,494	790	114	21,232	15,853	224	22,805	16,719	21
22	Minnesota	22	154	71	93	1,536	808	113	19,843	15,268	229	21,533	16,147	22
23	Mississippi	3	16	8	20	304	175	41	6,190	4,229	64	6,570	4,412	23
24	Missouri	13	69	43	52	958	609	119	20,909	16,821	187	21,936	17,473	24
25	Montana	7	44	17	24	388	181	40	4,181	2,803	71	4,613	3,001	25
26	Nebraska	34	181	112	61	1,008	571	50	7,043	5,455	145	8,232	6,138	26
27	Nevada	4	28	12	13	240	130	9	580	304	26	848	446	27
28	New Hampshire	10	49	24	15	266	152	29	4,452	3,460	55	4,767	3,636	28
29	New Jersey	14	79	48	30	540	314	124	22,756	17,021	169	23,375	17,383	29
30	New Mexico	3	17	8	19	345	184	31	3,401	2,439	54	3,763	2,631	30
31	New York	89	285	130	150	2,536	1,601	448	111,010	85,714	646	113,781	87,445	31
32	North Carolina	3	15	6	45	876	485	88	10,129	6,708	136	11,020	7,289	32
33	North Dakota	2	18	10	20	336	176	29	3,395	2,565	51	3,739	2,751	33
34	Ohio	28	161	82	100	1,679	891	171	36,365	25,277	301	38,205	26,250	34
35	Oklahoma	27	88	37	14	588	328	53	6,382	4,036	95	7,023	4,981	35
36	Oregon	6	42	24	29	450	296	45	6,886	5,756	80	7,378	6,076	36
37	Pennsylvania	39	220	120	95	1,638	924	309	61,162	47,200	443	63,020	48,244	37
38	Rhode Island	3	11	7	13	209	123	25	5,507	3,568	41	5,727	3,698	38
39	South Carolina	1	2	1	18	352	162	34	6,018	4,048	53	6,372	4,211	39
40	South Dakota	5	42	20	16	267	126	33	4,045	2,273	55	4,354	2,419	40
41	Tennessee	6	24	13	33	556	301	56	9,077	6,329	95	9,657	6,643	41
42	Texas	16	101	50	75	1,249	694	117	17,307	12,384	208	18,657	13,128	42
43	Utah	10	72	39	14	190	100	11	1,817	1,295	35	2,079	1,436	43
44	Vermont	5	29	15	11	184	118	20	2,353	1,882	36	2,566	1,995	44
45	Virginia	10	41	18	29	548	281	73	12,861	9,227	112	13,450	9,526	45
46	Washington	11	73	41	56	906	516	77	11,587	8,549	146	12,566	9,106	46
47	West Virginia	3	16	10	14	265	160	51	7,129	4,956	68	7,410	5,126	47
48	Wisconsin	13	68	37	56	927	546	151	19,539	15,083	220	20,534	15,666	48
49	Wyoming	3	17	9	10	149	84	16	1,517	956	29	1,683	1,049	49
	Totals*	619	3,479	1,846	2,112	36,514	20,269	4,028	715,729	531,024	6,830	755,722	533,133	

* For 39 hospitals and 32 homes the capacity was not reported (see Table 8).

increasing tendency toward the establishment of teaching hospitals—necessarily general hospitals—in connection with state university medical schools. These care more for acute than chronic cases since the former are of more value for teaching purposes.

In Louisiana and Mississippi large charity general hospitals are being maintained by the state governments. In Pennsylvania and West Virginia, also, state hospitals providing a general medical and surgical service have been established in the large mining districts. The large charity hospitals maintained by the local county and city governments are also mostly general in their character.

FEDERAL HOSPITALS

The 220 hospitals of various kinds maintained by the federal government include those of the Veterans' Bureau, the United States Public Health Service, the U. S. Army, the Indian service and the hospitals of federal prisons, soldiers' homes and other institutions for beneficiaries and employees of the hospital beds of the country and care for 47.3 per cent. of all hospital patients.

Nervous and mental patients in all states are housed in a few large hospitals. That is not the case, however, in the methods of dealing with other conditions. With tuberculous patients, for example, Pennsylvania has built one or two large sanatoriums, while in Wisconsin smaller sanatoriums are generally distributed throughout the state.

COUNTY HOSPITALS

Of the 3,066 counties in the United States there are only 361 that maintain hospitals at the county expense. These 361 counties are supporting altogether 465 hospitals with a total of 46,571 beds which on the average are occupied by 32,785 patients. California has 56, the largest number of hospitals controlled by counties, followed by New York with 50, Wisconsin with 48, Indiana with 27, Illinois with 26, New Jersey with 24, Ohio with 23, Pennsylvania with 21, and Michigan with 20. There are four states which have no hospitals what-

ever which are maintained by counties, these being Georgia, Louisiana, Mississippi and Rhode Island. The lack of a hospital maintained by county expense, however, does not imply that a county is entirely without hospital service. (See Table 9, page 124.) As a matter of fact, including private hospitals, of the 3,066 counties, 1,521, or 49.6 per cent. have at least one hospital. This shows an increase over the report published in 1920 when only 1,332, or 44 per cent. of the counties were supplied with hospitals.

CITY AND COUNTY HOSPITALS

There are 35 hospitals maintained jointly by city and county. These hospitals have a total capacity of 4,701 beds which are occupied on the average by 3,052 patients. The joining of a city and a county in the support of a hospital has been found expedient where a city and county nearly coincide as to area and population, and has often resulted in hospital facilities superior to what would be possible with the community's funds and interests divided between two or more smaller institutions. Some of these "city and county hospitals" are such in name only since, evidently by mutual consent, one or the other unit has assumed entire control.

TABLE 2.—*Years When Existing Hospitals were Established*

States	Pre-War Period			Post-War Period 1919 to 1922	Date Established		
	Before 1900	1901 to 1910	1911 to 1918		Total Reporting	Not Reporting	Total
Alabama	22	13	24	21	80	5	85
Arizona	15	16	20	8	59	7	66
Arkansas	13	13	15	12	53	9	62
California	114	113	101	54	382	52	434
Colorado	41	33	20	11	105	8	113
Connecticut	36	23	13	8	80	6	86
Delaware	6	4	1	1	12	3	15
Dist. Columbia	17	6	6	1	30	9	39
Florida	8	11	21	14	54	8	62
Georgia	23	32	17	13	85	7	92
Idaho	9	20	12	5	46	7	53
Illinois	159	89	83	36	367	31	398
Indiana	66	46	43	19	174	5	179
Iowa	55	45	66	26	192	9	201
Kansas	47	39	45	17	148	1	149
Kentucky	51	23	23	18	115	6	121
Louisiana	23	18	19	15	75	5	80
Maine	23	20	15	7	71	7	78
Maryland	57	17	17	7	98	15	113
Massachusetts	153	80	50	18	301	23	324
Michigan	78	55	61	25	219	5	224
Minnesota	67	70	70	14	221	8	229
Mississippi	8	20	17	15	60	4	64
Missouri	82	40	38	9	169	18	187
Montana	24	12	26	6	68	3	71
Nebraska	33	26	36	18	113	32	145
Nevada	5	5	10	3	23	3	26
New Hampshire	27	21	2	2	52	3	55
New Jersey	80	29	30	14	153	16	169
New Mexico	12	22	11	6	51	3	54
New York	321	129	95	48	593	53	646
North Carolina	28	34	48	18	128	8	136
North Dakota	8	21	7	2	38	13	51
Ohio	102	68	75	28	273	28	301
Oklahoma	8	25	39	13	85	10	95
Oregon	18	29	23	5	75	5	80
Pennsylvania	235	110	74	16	435	14	449
Rhode Island	23	10	5	0	38	3	41
South Carolina	15	6	17	14	52	1	53
South Dakota	13	9	18	9	49	6	55
Tennessee	26	29	23	13	91	4	95
Texas	6	8	15	2	31	4	35
Utah	44	45	85	23	197	11	208
Vermont	20	9	6	1	36	0	36
Virginia	41	26	27	13	107	5	112
Washington	40	40	34	20	134	12	146
West Virginia	21	25	14	7	67	1	68
Wisconsin	98	51	57	18	219	1	220
Wyoming	8	10	10	4	27	2	29
Totals	2,419	1,651	1,584	677	6,331	499	6,830
Aver. per year		165	198	169			

HOSPITALS MAINTAINED BY NONGOVERNMENTAL AGENCIES

Of the 6,830 hospitals of the United States 5,094, or 74.6 per cent., are controlled by nongovernmental agencies. These hospitals have only 283,774 beds, or 37.6 per cent. of the total bed capacity, and only 178,379, or 62.9 per cent. of all these beds are constantly occupied as compared with 79.4 per cent. of beds of the hospitals under governmental control. The 5,094 nongovernmental hospitals are shown in Table 4. Figures are given by states for comparative purposes.

The largest proportion of hospitals, 2,196, or 32.2 per cent., are those maintained or controlled by independent associations or corporations not for profit, nongovernmental, nonfraternal and nonsectarian. This group includes many nonsecret organizations representing various movements for reform, social service and rescue work, such as the hospitals maintained by the National Florence Crittenton Mission, the Womens' Christian Temperance Union and the Salvation Army, and numerous local independent organizations. These hospitals have a total of 149,341 beds of which 95,674, or 64.1 per cent., are constantly occupied.

CONTROL BY INDIVIDUALS OR PARTNERSHIPS

The next largest group of nongovernmental hospitals is the 1,762 maintained or controlled by individuals and partnerships. This group has altogether 45,719 beds of which 27,393 are constantly occupied. These private institutions are frequently the only hospitals in the community and are sometimes the only institutions that survive. There are 348 counties in the United States in which there would be no hospitals excepting for those which are private property of physicians and nurses.

CONTROL BY RELIGIOUS ORGANIZATIONS

The third largest group, but the second largest in bed capacity, is that of hospitals under church control. Hospitals maintained by churches are found in every state except Delaware. Religious organizations for ages have supported hospitals the services of which were usually extended to all classes regardless of their beliefs. The acquiring of converts has almost invariably been a motive, secondary to that of relieving suffering. The current opinion of the public, church members and others alike, is that the care of the sick is a burden that should be borne by the whole community, regardless of what organization may take the lead in any hospital project.

Counting the hospitals that are under direct control of the church as well as those that bear the name and have some certain degree of connection, there are 893 with a total capacity of 77,941 beds which care for an average of 49,046 patients.

INDUSTRIAL HOSPITALS

There are 146 industrial hospitals, including those maintained by mines, railroads, mills and factories, as well as a number maintained by nonindustrial agencies which, because of their location, care mainly for industrial cases, usually on a contract basis. These 146 hospitals have altogether 5,730 beds which are occupied on the average by 3,079 patients.

These figures are not to be taken as an absolute measure of the amount of medical and surgical work connected with industrial plants as some employees are cared for as individual patients in hospitals that are not connected with any industry. Complete statistics in regard to industrial hospital work for the whole country are not available.

CONTROLLED BY FRATERNAL ORGANIZATIONS

There are now 97 hospitals financed or controlled by fraternal organizations which have a total capacity of 5,043 beds. In proportion to population, the fraternal hospitals thrive better in the midwest and western states. They are maintained by so-called secret orders and their benefits are intended primarily for their own members. Of late, however, fraternities have established hospitals which draw patients from outside as well as from the membership of their orders.

TYPES OF HOSPITALS

The 6,830 hospitals are divided naturally into two main groups, general and special hospitals. The general hospitals are those which care for patients suffering from various diseased conditions, while the special hospitals are those in which the service rendered is limited to diseases coming within the narrower lines of some special field. These hospitals are given by states in Table 5.

Each of these main groups are subdivided as shown in the following outline:

I. General Hospitals:			
a. Truly General			3,793
b. Limited General:			
1. Industrial		162	
2. Indian		70	
3. Army, Navy, Marine and Veterans		172	
4. School Infirmaries		41	445
c. Hospital Departments of Institutions:			
1. Orphanages and Homes for Children		275	
2. Homes for Aged and Incurables		195	
3. Reformatories		102	
4. Prisons		64	
5. County Almshouses		58	
6. Schools and Homes for the Deaf		47	
7. Schools and Homes for the Blind		26	767
Total General Hospitals			5,005
II. Special Hospitals:			
1. Nervous and Mental only		593	
2. Tuberculosis only		476	
3. Maternity only		262	
4. Convalescent and Rest		137	
5. Isolation		111	
6. Children's		81	
7. Eye, Ear, Nose and Throat only		58	
8. Orthopedic only		37	
9. Skin and Cancer only		32	
10. Venereal only		7	
11. Miscellaneous		31	
Total Special Hospitals			1,825
Grand Total			6,830

The first group includes 5,005 general hospitals, or 73.3 per cent. of all hospitals. This group is subdivided into 3,793, referred to as "truly general hospitals" in the sense that they receive all kinds of medical and surgical cases. Then come the 445 institutions referred to as "limited general hospitals," meaning those that accept patients with any kind of complaint, but which come within certain economic or vocational limitations. These include hospitals connected with industrial plants, such as mining industries, steel and iron works, and large mercantile plants; also the Army, Navy and Marine hospitals, Indian hospitals and school reformatories.

A third type of general hospitals includes the 767 hospital departments of the orphanages and homes for children, homes for aged and incurables, reformatories, prisons, county almshouses, schools and homes for the deaf, and schools and homes for the blind. These hospital departments give general medical and surgical care but only to those who live in the institutions.

The special hospitals number 1,825, or 26.7 per cent. of all hospitals as shown in the above tabulation. The character of patients cared for by special hospitals is usually indicated in their names. Among the 31 miscellaneous hospitals are those that specialize in certain types of diseases such as rectal, diabetic and cardiac diseases, or those suffering from pellagra, as well as a few that specialize mainly in radium treatments or other special forms of therapy.

Specialization in Hospitals

The trend of specialization in medicine is reflected in the types of hospitals that are being used today, but to a larger degree in the numerous special services provided in general hospitals. Data thus far obtainable do not show the relative proportion of beds in general hospitals that are devoted to the various specialties. For example, we know that there are 262 maternity hospitals with a total capacity of 7,797 beds, but the data do not show how many beds are used for maternity cases in all general hospitals. In a similar way, the work of other special hospitals is known but the total number of beds in the corresponding special departments in the general hospitals is not known. At present, many hospitals do not keep

TABLE 3.—*Hospitals Maintained by Governmental Agencies*

Marginal Number	State	Federal			State			County			City			City and County			Total Government			Marginal Number
		No. of Hospitals	No. of Beds	Aver. No. of Beds in Use	No. of Hospitals	No. of Beds	Aver. No. of Beds in Use	No. of Hospitals	No. of Beds	Aver. No. of Beds in Use	No. of Hospitals	No. of Beds	Aver. No. of Beds in Use	No. of Hospitals	No. of Beds	Aver. No. of Beds in Use	No. of Hospitals	No. of Beds	Aver. No. of Beds in Use	
1	Alabama	1	80	75	11	3,046	2,580	7	334	247	4	225	119	..	.....	.....	23	3,685	3,021	1
2	Arizona	15	1,506	1,001	3	614	556	8	282	164	1	12	8	..	.....	.....	27	2,416	1,731	2
3	Arkansas	2	250	169	8	2,647	2,272	3	304	152	3	180	118	..	.....	.....	16	3,281	2,711	3
4	California	15	4,202	2,967	18	12,890	11,272	50	6,135	3,708	6	396	175	6	1,667	1,167	101	25,260	19,320	4
5	Colorado	3	3,200	2,100	7	2,314	2,223	8	300	200	5	452	304	..	.....	.....	23	6,266	4,827	5
6	Connecticut	1	500	417	15	5,372	4,988	2	120	82	6	420	226	..	.....	.....	24	6,412	5,713	6
7	Delaware	..	.....	.....	3	502	524	1	5	3	1	25	12	..	.....	.....	5	592	539	7
8	D. C. Columbia	8	6,968	5,754	2	242	135	..	.....	.....	..	.....	.....	..	.....	.....	10	7,231	5,879	8
9	Florida	5	1,155	554	5	1,577	1,774	3	165	113	6	228	138	..	.....	.....	19	3,425	2,579	9
10	Georgia	4	591	451	6	4,408	4,298	..	.....	.....	8	910	575	2	430	339	20	6,334	5,663	10
11	Idaho	3	418	245	8	1,000	858	2	67	44	1	12	8	1	53	30	15	1,550	1,185	11
12	Illinois	7	2,674	2,182	22	21,730	15,222	26	4,606	2,235	25	2,236	963	..	.....	.....	81	31,335	20,602	12
13	Indiana	2	1,142	778	19	8,231	6,865	27	1,344	953	12	876	531	2	42	16	62	11,635	9,143	13
14	Iowa	3	382	274	20	8,701	7,429	16	643	424	15	440	206	..	.. ..	.....	54	10,135	8,321	14
15	Kansas	5	922	516	19	5,149	4,705	7	318	146	7	151	65	..	.....	.....	38	6,540	5,492	15
16	Kentucky	6	756	487	13	5,513	5,234	4	218	149	5	617	352	4	278	88	32	7,382	6,310	16
17	Louisiana	4	1,183	941	9	4,675	4,171	..	.....	.....	3	340	179	..	.....	.....	16	6,198	5,291	17
18	Maine	4	510	213	10	2,800	2,532	3	61	38	7	222	155	..	.....	.....	24	3,593	2,938	18
19	Maryland	3	1,053	695	17	6,138	4,615	5	236	156	4	1,629	1,047	..	.....	.....	29	9,056	6,455	19
20	Massachusetts	7	1,767	697	29	23,342	22,090	6	526	358	36	4,758	3,182	..	.....	.....	78	30,388	26,322	20
21	Michigan	1	24	1	17	8,383	7,542	20	2,784	2,045	27	1,960	1,211	1	35	18	66	13,186	10,817	21
22	Minnesota	5	725	519	16	9,440	8,594	15	913	765	12	1,111	736	3	920	525	51	13,109	11,139	22
23	Mississippi	2	574	356	13	4,272	3,158	..	.....	.....	3	105	60	..	.....	.....	18	5,011	3,568	23
24	Missouri	6	1,185	983	13	7,020	6,300	7	402	248	10	4,567	3,871	1	13	11	37	13,187	11,363	24
25	Montana	4	221	122	7	1,762	1,626	5	251	122	1	27	9	1	10	3	18	2,271	1,882	25
26	Nebraska	2	70	16	16	3,906	3,613	5	295	172	4	120	43	..	.....	.....	27	4,480	3,844	26
27	Nevada	2	40	24	2	226	127	9	209	146	..	.....	.....	..	.....	.....	13	535	297	27
28	N'w Hampshire	1	979	641	6	1,965	1,808	3	145	114	6	270	158	..	.....	.....	16	3,379	2,811	28
29	New Jersey	1	18	15	16	6,557	5,778	24	5,050	4,442	12	1,094	1,081	..	.....	.....	53	14,168	11,316	29
30	New Mexico	11	1,637	1,184	6	477	403	2	36	19	1	15	9	..	.....	.....	20	2,165	1,615	30
31	New York	12	3,005	1,929	35	46,316	42,218	50	3,212	2,410	44	20,340	13,384	..	.....	.....	141	73,473	59,941	31
32	North Carolina	2	1,126	625	10	4,968	3,697	5	115	76	6	395	275	..	.....	.....	23	6,619	4,643	32
33	North Dakota	5	115	52	5	1,882	1,648	3	96	46	6	133	64	..	.....	.....	19	2,226	1,810	33
34	Ohio	6	1,892	1,100	21	18,888	14,310	23	1,155	688	32	4,363	2,314	..	.....	.....	82	26,298	18,802	34
35	Oklahoma	7	481	290	14	4,094	3,432	1	75	25	7	404	231	2	72	26	31	5,126	4,005	35
36	Oregon	4	244	157	8	3,429	3,126	4	534	460	1	76	25	..	.....	.....	17	4,283	3,768	36
37	Pennsylvania	3	1,480	816	32	17,584	16,419	21	4,268	3,571	40	11,148	8,337	..	.....	.....	96	34,480	29,143	37
38	Rhode Island	3	602	164	9	2,847	2,216	..	.....	.....	1	200	134	..	.....	.....	13	3,739	2,514	38
39	South Carolina	4	1,734	743	5	2,022	2,457	3	200	94	2	75	33	..	.....	.....	14	4,631	3,327	39
40	South Dakota	10	765	546	6	1,816	944	2	43	12	..	.....	.....	..	.....	.....	18	2,624	1,502	40
41	Tennessee	4	1,347	734	10	3,178	2,788	5	779	492	3	435	234	3	400	325	25	6,130	4,573	41
42	Texas	4	1,722	1,329	17	7,998	6,367	4	158	96	7	672	477	8	656	408	40	11,196	8,677	42
43	Utah	2	60	11	4	732	501	4	205	134	1	10	6	..	.....	.....	11	1,007	652	43
44	Vermont	1	62	18	7	1,128	1,019	1	40	26	3	132	86	..	.....	.....	12	1,372	1,149	44
45	Virginia	4	2,070	1,160	15	6,544	5,547	2	135	67	8	708	420	..	.....	.....	29	9,457	7,194	45
46	Washington	8	545	361	13	5,235	4,771	9	924	562	7	550	332	..	.....	.....	37	7,354	6,026	46
47	West Virginia	..	.....	.....	13	3,297	3,012	2	85	47	2	96	58	..	.....	.....	17	3,577	3,117	47
48	Wisconsin	5	739	373	17	3,453	3,131	48	7,871	6,554	13	600	272	1	125	96	84	12,818	10,416	48
49	Wyoming	3	466	208	4	583	450	4	184	123	..	.....	.....	..	.....	.....	11	1,233	776	49
	Totals	220	53,889	34,987	601	392,206	261,840	465	46,571	32,785	415	64,599	42,140	35	4,701	3,032	1,736	471,948	374,754	

special statistics for each department and there is also a lack of uniformity in classifying patients.

Information in regard to the number of beds available for each separate service would be helpful, and may later be obtainable, nevertheless, a strict separation or allotment of beds to certain types of patients is not at present advisable in general hospitals.

Special hospitals are generally found in populous centers while the remote regions are best served by hospitals that admit practically all types of cases. At present the number of special hospitals is on the increase and general hospitals also are making greater provision for certain special cases which were heretofore not freely admitted to general hospitals. This is especially true of tuberculosis, isolation, venereal and nervous and mental cases, for which in the larger general hospitals, special rooms, wards or buildings are set aside.

hospital beds. The present report makes no attempt to present data relative to well inmates in these institutions.

Transient or seasonal institutions such as day camps, quarantine stations, detention homes and various kinds of emergency and first aid stations, many of which are temporary, depending on the duration of a certain epidemic or some transient industrial or military operation, are omitted from the statistics.

HOSPITALS FOR LOCAL SERVICE

Table 6 groups hospitals which are for local or community use, as compared with state and federal hospitals which are located without any consideration of local or community needs. In other words, all hospitals except the state and the federal provide the general hospital services for a community. These local agencies include 6,009 hospitals with a total of 399,645 beds, of which 256,356 are occupied all the time. The

TABLE 4.—*Nongovernmental Hospitals*

Marginal Number	State	Denominational			Fraternal			Industrial			Individual and Partnership			Independent Associations			Total Non-Government			Marginal Number
		No. of Hospitals	No. of Beds	Aver. No. of Beds in Use	No. of Hospitals	No. of Beds	Aver. No. of Beds in Use	No. of Hospitals	No. of Beds	Aver. No. of Beds in Use	No. of Hospitals	No. of Beds	Aver. No. of Beds in Use	No. of Hospitals	No. of Beds	Aver. No. of Beds in Use	No. of Hospitals	No. of Beds	Aver. No. of Beds in Use	
1	Alabama	11	954	460	2	105	58	2	320	170	31	1,033	558	16	608	288	62	3,015	1,534	1
2	Arizona	10	504	277	..	...	...	7	202	87	9	151	84	13	505	286	39	1,362	734	2
3	Arkansas	7	532	293	1	40	20	3	72	36	22	549	295	13	610	312	46	1,804	956	3
4	California	20	1,293	683	8	455	227	19	406	289	205	5,913	3,487	81	6,058	4,097	333	14,122	8,783	4
5	Colorado	21	1,996	1,041	4	569	500	3	270	139	30	586	361	32	1,980	1,459	90	5,401	3,500	5
6	Connecticut	7	663	405	2	291	219	1	6	4	17	494	380	35	4,138	3,004	62	5,592	4,012	6
7	Delaware	..	.....	.....	..	...	...	..	...	...	1	30	15	9	504	267	10	534	282	7
8	Dist. Columbia	8	502	255	2	9	3	..	...	...	1	25	13	18	1,572	964	29	2,108	1,225	8
9	Florida	4	260	167	2	102	37	1	65	32	24	518	261	12	486	278	43	1,431	775	9
10	Georgia	6	506	309	3	103	89	1	75	40	36	1,459	783	26	945	453	72	3,178	1,674	10
11	Idaho	9	384	220	..	...	...	2	28	9	14	245	144	13	416	271	58	1,073	644	11
12	Illinois	92	8,808	4,527	5	203	101	6	290	184	89	2,837	1,469	125	8,940	5,398	317	21,137	11,679	12
13	Indiana	25	2,028	1,241	4	234	155	2	170	60	37	839	489	49	3,194	1,969	117	6,465	3,934	13
14	Iowa	42	3,525	2,306	1	35	21	1	40	13	68	1,177	676	35	1,297	766	147	6,074	3,784	14
15	Kansas	27	2,041	1,228	1	12	6	3	182	120	29	569	319	51	1,586	868	111	4,390	2,547	15
16	Kentucky	22	1,392	781	7	195	92	4	88	28	33	1,114	622	23	926	446	89	3,715	1,969	16
19	Louisiana	11	984	643	6	270	118	4	178	78	20	381	257	23	1,301	913	64	3,064	2,009	17
18	Maine	2	39	26	..	...	...	..	...	...	24	430	276	28	1,406	898	54	1,875	1,200	18
19	Maryland	20	1,868	1,552	2	29	17	..	...	...	29	1,145	785	33	2,705	1,843	84	5,747	4,197	19
20	Massachusetts	13	777	560	1	28	15	2	49	33	50	1,067	668	180	11,177	7,377	246	13,098	8,643	20
21	Michigan	33	2,881	1,887	3	100	84	20	401	191	55	1,392	848	47	4,845	2,892	158	9,079	5,902	21
22	Minnesota	38	2,544	1,457	..	...	...	7	232	175	66	1,283	730	67	4,365	2,646	178	8,424	5,008	22
23	Mississippi	3	118	77	8	278	167	..	...	...	18	527	251	17	636	324	46	1,559	819	23
24	Missouri	36	3,472	2,553	5	554	380	7	714	342	45	1,378	1,012	57	2,631	1,823	150	8,749	6,110	24
25	Montana	20	1,402	632	..	...	...	6	297	158	15	235	129	12	408	200	53	2,342	1,119	25
26	Nebraska	13	850	579	3	36	17	..	...	...	80	1,450	849	22	1,407	849	118	3,752	2,294	26
27	Nevada	1	50	3	..	...	...	3	95	58	9	168	88	...	.....	.....	13	313	149	27
28	New Hampshire	11	526	290	..	...	...	..	...	...	11	289	169	17	573	361	39	1,388	825	28
29	New Jersey	15	2,314	1,580	2	135	79	1	30	10	30	850	556	68	5,878	3,842	116	9,207	6,067	29
30	New Mexico	9	692	456	..	...	...	6	271	142	8	139	81	11	490	337	34	1,598	1,016	30
31	New York	75	7,140	4,789	6	427	273	3	103	76	98	3,968	2,804	323	29,270	20,062	505	40,308	27,504	31
32	North Carolina	14	749	517	2	37	18	1	50	32	43	1,223	723	53	2,343	1,356	113	4,401	2,646	32
33	North Dakota	14	1,079	723	..	...	...	..	...	...	10	175	90	8	259	122	32	1,513	941	33
34	Ohio	39	4,028	2,545	6	154	94	6	86	49	67	1,401	825	101	6,238	3,935	219	11,907	7,448	34
35	Oklahoma	8	436	232	..	...	...	..	...	...	41	1,002	488	16	459	256	64	1,897	976	35
36	Oregon	13	806	658	..	...	...	1	8	5	21	700	535	28	1,581	1,110	63	3,095	2,308	36
37	Pennsylvania	35	6,137	4,468	7	422	352	5	135	73	79	2,345	1,596	206	19,501	12,612	353	28,540	19,101	37
38	Rhode Island	4	290	187	..	...	...	..	...	...	5	117	72	19	1,581	920	28	1,988	1,179	38
39	South Carolina	4	191	99	..	...	...	..	...	...	14	354	190	21	1,196	605	39	1,741	884	39
40	South Dakota	7	437	313	..	...	...	..	...	...	16	486	240	14	807	364	37	1,730	917	40
41	Tennessee	6	1,019	617	..	...	...	..	...	...	28	778	435	36	1,730	1,018	70	3,527	2,070	41
42	Texas	26	3,021	1,809	4	101	45	6	356	156	77	1,905	1,188	55	2,018	1,253	168	7,461	4,451	42
43	Utah	3	554	443	..	...	...	3	20	11	12	159	70	6	339	250	24	1,072	774	43
44	Vermont	3	124	85	..	...	...	..	...	...	5	58	37	16	1,012	724	24	1,194	846	44
45	Virginia	10	730	373	..	...	...	4	155	98	23	658	396	46	2,450	1,463	83	3,993	2,332	45
46	Washington	19	2,131	1,198	..	...	...	4	200	97	46	954	514	40	1,927	1,271	109	5,212	3,080	46
47	West Virginia	5	585	337	..	...	...	1	75	50	22	802	456	23	2,371	1,166	51	3,833	2,009	47
48	Wisconsin	49	4,514	3,150	..	...	...	..	...	...	39	665	439	48	2,537	1,661	136	7,716	5,250	48
49	Wyoming	2	24	17	..	...	...	1	64	28	10	228	143	5	134	85	18	450	273	49
	Totals	803	77,941	49,946	97	5,043	3,187	146	5,730	3,079	1,762	45,719	27,393	2,196	149,341	95,674	5,004	283,774	178,379	

INSTITUTIONS RELATED TO HOSPITALS

It is not always easy to tell just when an institution should be called a hospital, especially in the case of certain types of convalescent and rest homes, asylums for incurables, private reformatories, and homes and training schools for the wayward, blind, deaf and crippled.

In the present survey the statistics relate to (*a*) hospitals and sanatoriums and other institutions devoted exclusively to the care of the sick, and (*b*) hospital departments of related institutions (homes, schools, orphanages, reformatories, etc.), that may be primarily for custodial, correctional or educational care but which have a department where the inmates or members of the institutions are cared for when they are sick. We have listed 1,704 such institutions of which 767 have hospital departments with an aggregate capacity of 24,926

percentage of beds occupied in these institutions for local use is 64.1 per cent. as compared with 67 per cent. in 1920.* The decrease in the percentage of beds occupied is due either to a decrease in the cases of illness last year which required hospitalization, or, more likely, to the increase in the number of hospitals. The total beds for local use is 43,568 more than in all state and federal hospitals, but the number of patients in local hospitals is 40,421 less than in the state and

* J. A. M. A., April 16, 1921, pp. 1083-1107; also, A. M. A. Bulletin, May 15, 1921.

Note.—Any statement of the ratio of beds to population at this time is omitted because no reliable estimate of the present population of the several states is obtainable. The population has changed since the census of 1920 sufficiently to make the use of the census figures impracticable. In 1920 the ratio of beds for local community use was 1 bed to 340 persons. The population varied by localities from 139 in Nevada to 1,054 in Mississippi.

federal. Note that, of the beds in local hospitals, 64.1 per cent. are filled as compared with 83.3 per cent. in state and federal hospitals—a difference due to the active service of local hospitals as compared with the more custodial service in state and federal hospitals.

PHYSICIANS, NURSES AND OTHERS SERVING AS HOSPITAL ADMINISTRATORS

As shown in Table 7, of the 6,761 hospitals reporting whether the superintendent or person in charge was a physician, registered nurse, or lay person, the superintendents or administrators of 2,668 or 39.1 per cent. were physicians; of 1,283 or 18.8 per cent. they were registered nurses, and of 2,810 or 41.1 per cent. they were persons not having the degree M.D. or R.N. The 3,793 general hospitals were divided between the physicians, registered nurses and others in the ratio of 32.5 per cent., 28.1 per cent. and 38.6 per cent., respectively. The group of hospitals having the largest percentage in charge of physicians was the Army, Navy, Marine and Veterans' hospitals with 94.2 per cent., followed by prisons with 84.4 per cent.; nervous and mental, 75.7 per cent.; industrial, 73.5 per cent.; eye, ear, nose and throat, 63.8 per cent., and tuberculosis with 59.5 per cent.

LABORATORIES AND NURSE TRAINING SCHOOLS

Table 8, on page 125, shows for all hospitals, divided in groups according to their size, which have (*a*) laboratories, (*b*) roentgen-ray departments, and (*c*) nurse training schools.

LABORATORIES

The laboratory departments of hospitals have undergone a remarkable development in the past several years. In the 2,731 hospitals of twenty-five beds or less, only 710, or 26 per cent., claim to have clinical laboratories. This is a fair showing for such small hospitals, since 619 of them report less than ten beds each. Among the 2,704 hospitals of twenty-five to 100 beds, only 1,366, or barely over 50 per cent., even claim to have clinical laboratories. In the 915 hospitals having 100 to 300 beds, there are 658 hospitals, or 72 per cent., reporting laboratories, while 301, or 74 per cent., of the 409 hospitals of more than 300 beds capacity have clinical laboratories. Of the entire group of 6,830 hospitals, only 3,035, or 44.4 per cent., report that they have laboratories.

ROENTGEN-RAY DEPARTMENTS

Of the 2,731 hospitals having twenty-five beds or less, 672, or 24.6 per cent., have roentgen-ray departments; of the 2,704 having from twenty-six to 100 beds, 1,281, or 47.4 per cent.; of the 915 having from 100 to 300 beds, 642, or 70.2 per cent., and of the 409 hospitals having over 300 beds, 246, or 60.1 per cent. Altogether, of the 6,830 hospitals, 2,841, or 41.5 per cent., reported roentgen-ray departments.

The proportion of different types or kinds of hospitals that have roentgen-ray departments is shown for the seven leading types, as follows:

Type of Hospital	Number of Hospitals	Number Having X-Ray	Per Cent.
General	3,793	2,149	56.7
Nervous and Mental	566	129	21.8
Tuberculosis	476	181	38.0
Eye, Ear, Nose and Throat	58	19	32.8
Maternity	262	29	10.3
Children's	81	23	28.4
Orthopedic	37	16	43.2

TABLE 5.—*Types of Hospitals—by States*

Marginal No.	State	General	Industrial	Indian	Army, Navy, Marine, Veteran	School Infirmaries	Orphans	Aged and Incurable	Reformatories	Prisons	County Almshouses	Deaf	Blind	Nervous and Mental	Tuberculosis	Maternity	Convalescent	Isolation	Children's	Eye, Ear, Nose and Throat	Orthopedic	Skin and Cancer	Venereal	Miscellaneous	Totals	Marginal No.
1	Alabama	52	2	..	2	4	3	2	1	2	1	2	1	2	4	5	1	..	1	..	..	..	..	..	85	1
2	Arizona	23	6	13	2	..	..	..	1	1	2	..	..	1	15	..	..	1	..	1	..	..	..	..	66	2
3	Arkansas	40	3	..	3	..	..	..	..	3	1	1	1	5	2	3	..	..	..	..	..	..	..	..	62	3
4	California	267	18	5	11	1	5	8	5	1	4	1	1	26	23	20	11	5	4	..	1	1	1	5	434	4
5	Colorado	64	2	2	2	..	5	2	2	1	..	1	..	7	18	3	1	2	..	..	..	1	..	..	113	5
6	Connecticut	42	1	..	2	2	1	5	4	1	..	1	..	12	8	1	3	2	..	..	1	..	..	..	80	6
7	Delaware	6	..	..	..	..	1	1	1	..	..	..	..	2	2	1	..	..	1	..	..	..	..	..	15	7
8	Dist. Columbia	14	..	..	4	..	1	9	1	..	..	..	..	2	..	4	1	..	..	2	..	1	..	..	39	8
9	Florida	44	1	..	6	1	2	..	1	..	..	1	..	3	1	2	..	..	..	..	..	..	..	..	62	9
10	Georgia	62	1	..	4	1	5	1	..	3	..	1	..	5	2	4	..	1	1	..	1	..	..	..	92	10
11	Idaho	38	2	2	2	1	..	..	1	1	1	1	..	3	..	..	..	1	..	..	..	..	..	..	53	11
12	Illinois	225	5	..	7	2	22	20	3	2	..	1	1	29	27	18	11	10	6	3	1	1	..	4	398	12
13	Indiana	102	2	..	3	..	9	5	4	2	8	1	..	16	6	2	7	4	3	..	..	4	..	1	179	13
14	Iowa	141	3	1	2	1	4	3	6	1	3	1	1	16	5	3	..	7	..	1	..	2	..	..	201	14
15	Kansas	98	3	1	4	1	6	2	3	3	1	1	1	14	3	1	1	1	1	..	1	1	1	1	149	15
16	Kentucky	64	4	..	3	..	10	2	3	1	..	1	2	11	7	1	3	..	4	3	..	..	..	2	121	16
17	Louisiana	45	4	..	5	..	4	2	..	1	..	1	1	4	4	2	2	2	..	..	1	..	1	1	80	17
18	Maine	45	..	..	4	..	2	..	2	1	..	1	1	6	6	5	2	1	..	1	1	..	..	..	78	18
19	Maryland	33	..	..	3	3	10	5	3	3	1	1	1	23	5	3	4	2	6	2	3	1	1	..	113	19
20	Massachusetts	145	2	..	6	6	7	20	6	2	..	..	..	42	42	13	13	5	8	1	4	1	..	1	324	20
21	Michigan	122	22	1	1	..	4	7	4	1	1	1	2	14	18	6	7	8	2	1	1	..	..	1	224	21
22	Minnesota	138	7	2	4	1	10	4	2	1	1	1	..	14	21	8	3	6	..	1	2	1	..	2	229	22
23	Mississippi	50	..	..	2	1	2	1	..	1	..	..	1	3	2	..	1	..	..	..	..	..	..	..	64	23
24	Missouri	93	7	..	6	1	12	3	1	1	1	1	1	24	8	16	3	1	2	1	..	2	..	3	187	24
25	Montana	44	6	3	3	1	2	..	..	1	1	..	..	1	1	4	3	2	..	..	..	..	..	..	71	25
26	Nebraska	100	..	2	2	..	1	3	3	1	2	1	1	4	1	5	..	4	..	1	1	1	1	2	145	26
27	Nevada	15	3	2	..	..	..	..	..	1	3	..	..	1	..	..	1	..	..	..	..	..	..	..	26	27
28	New Hampshire	34	..	..	2	..	6	2	1	1	..	..	..	4	2	1	..	2	..	..	..	..	..	..	55	28
29	New Jersey	74	1	..	3	1	6	5	4	1	1	1	..	24	15	9	5	8	5	2	2	..	1	1	169	29
30	New Mexico	16	8	9	2	..	..	..	1	1	..	1	1	1	10	2	..	..	2	..	..	..	..	..	54	30
31	New York	293	3	..	13	2	46	30	7	7	7	6	2	61	61	27	29	9	13	12	8	2	..	1	646	31
32	North Carolina	77	3	1	2	3	5	2	..	..	1	1	..	12	21	3	2	..	1	1	1	..	..	..	136	32
33	North Dakota	36	..	4	1	..	..	..	..	1	..	..	..	2	1	2	..	2	..	2	..	..	..	..	51	33
34	Ohio	164	5	..	8	..	16	13	5	1	8	1	..	28	14	19	3	3	7	4	..	1	..	1	301	34
35	Oklahoma	64	..	6	4	..	2	..	..	1	..	..	1	5	5	5	..	..	..	1	..	..	..	1	35	35
36	Oregon	48	1	1	4	..	3	..	1	1	1	..	..	7	3	5	1	2	..	1	..	..	..	..	80	36
37	Pennsylvania	227	14	..	4	1	25	25	6	3	5	3	3	47	25	18	9	5	6	4	6	2	1	..	449	37
38	Rhode Island	19	..	..	2	..	2	3	3	1	..	1	..	3	3	2	2	..	..	..	..	..	..	..	41	38
39	South Carolina	35	..	..	3	2	3	..	1	..	..	..	..	2	5	1	..	..	..	1	..	..	..	..	53	39
40	South Dakota	36	..	8	2	..	..	..	..	1	1	1	..	2	2	2	..	..	..	..	..	1	..	..	55	40
41	Tennessee	51	..	..	3	1	1	..	2	1	1	2	2	11	6	5	1	2	..	4	1	..	..	1	95	41
42	Texas	130	6	..	5	2	6	1	2	1	1	2	..	16	21	7	2	..	3	2	..	..	..	1	208	42
43	Utah	22	3	1	1	..	..	..	1	1	..	1	..	2	..	1	..	1	1	..	..	..	..	..	35	43
44	Vermont	21	..	..	1	..	2	1	2	1	..	1	..	4	3	..	..	..	..	..	..	..	..	..	36	44
45	Virginia	57	4	..	5	1	5	3	2	1	..	1	..	11	9	8	..	1	2	1	..	1	..	..	112	45
46	Washington	89	5	2	9	1	4	2	1	1	1	1	..	7	7	7	1	3	..	1	1	1	..	2	140	46
47	West Virginia	48	4	..	..	..	..	..	2	1	1	1	..	3	4	1	1	..	..	2	..	..	..	..	68	47
48	Wisconsin	112	..	3	3	..	4	3	5	1	..	1	1	49	18	5	3	8	2	2	..	..	..	..	220	48
49	Wyoming	19	1	1	3	..	1	..	..	..	..	..	..	2	..	2	..	..	..	..	..	..	..	..	29	49
	Totals	3,793	192	70	172	41	275	195	102	64	58	47	26	593	476	262	137	111	81	58	37	32	7	31	6,830	

Of the 3,793 general hospitals 2,149, or 56.7 per cent., have roentgen-ray departments. The next best showing is by orthopedic hospitals with 43.2 per cent. It should be said, in fairness to the hospitals represented above, that many of them are small and that others are in position to have their roentgen-ray work done outside the hospital.

TABLE 6.—*Hospitals for Local or Community Use*

Supervising Agency	Number of Hospitals	Number of Beds	Average Number of Beds in Use
Church	803	77,941	49,046
Fraternal	97	5,043	3,187
Industrial	146	5,730	3,079
Individual and partnership	1,762	45,719	27,393
County	465	46,571	32,785
City	415	64,509	42,149
City and county	35	4,701	3,052
Miscellaneous	2,196	149,341	95,674
Total for community use	6,009	399,645	256,356 (64.1%)
Federal	220	53,869	34,987
State	601	302,208	261,840
Total for federal and state	821	356,077	296,777 (83.3%)
Grand total hospital supply	6,830	755,722	553,133 (73.2%)

Note—Practically all beds in hospitals other than state and federal are available for the people in the community in which the hospital is located. Federal and state hospitals are included in the table to afford ready comparison between local and nonlocal agencies.

NURSE TRAINING SCHOOLS

Of the 1,964 nurse training schools in the United States, 1,031, or 52.5 per cent., are in hospitals of from twenty-five to 100 beds capacity; 495, or 25.2 per cent., are in the hospitals of 100 to 300 beds; 261, or 13.3 per cent., are in hospitals of twenty-five beds or less, and 177, or 9.0 per cent., are in hospitals of over 300 beds. The low proportion of

TABLE 7.—*Hospital Superintendents Showing Numbers of Physicians, Nurses and Others, Serving as Hospital Administrators*

Kind of Hospital	No. of Hospitals	Physicians		Registered Nurses		Lay Persons in Charge		Unknown
		No.	%	No.	%	No.	%	
General hospitals	3,793	1,223	32.5	1,006	28.1	1,462	38.6	22
Nervous and mental	506	449	75.7	9	1.5	134	22.6	1
Tuberculosis	476	283	59.5	57	11.9	128	26.9	8
Children's Homes*	275	19	6.9	13	4.7	241	87.6	2
Maternity	262	55	20.9	37	14.1	168	64.1	2
Homes for aged and incurables*	195	19	9.7	3	1.5	171	87.7	2
Army, navy, marine and Veterans'†	172	102	94.2	.....	....	10	5.8	..
Industrial	102	119	73.5	16	9.9	27	16.7	..
Convalescent and rest	137	49	35.8	16	11.7	69	50.4	3
Isolation	111	54	48.6	17	15.3	40	36.0	..
Reformatory*	102	24	23.5	.....	....	76	74.5	2
Children's hospitals	81	23	28.4	23	28.4	35	43.2	..
Indian	70	20	28.6	.....	....	50	71.7	..
Prisons*	64	54	84.4	.....	....	10	15.6	..
County almshouses*	58	9	15.5	.....	....	49	84.5	..
Eye, ear, nose and throat	58	37	63.8	4	6.9	16	27.6	1
Schools and homes for Deaf*	47	4	8.5	.....	....	39	82.9	4
School infirmaries	41	15	36.6	6	14.5	20	48.8	..
Orthopedic	37	4	10.9	11	29.8	19	51.3	3
Skin and cancer	32	18	56.2	3	9.4	9	28.1	2
Schools and homes for Blind*	29	1	3.8	.....	....	24	92.3	1
Venereal	7	4	57.1	.....	....	3	42.9	..
Miscellaneous	31	13	41.9	2	6.5	10	32.3	6
Total	6,830	2,666	39.1	1,283	18.8	2,810	41.1	69

* Refers only to the hospital department of such institutions.
† Including all ex-soldiers' hospitals and hospital departments of soldiers' homes.

training schools in these largest hospitals is due partly to the fact that many of them are large hospitals for nervous and insane or for tuberculous patients and cannot provide a general training for nurses.

In the hospitals grouped according to size, of the 915 hospitals having from 100 to 300 beds, 495, or 54 per cent., have nurse training schools; of the 409 having over 300 beds, 177, or 43.3 per cent., have nurse training schools; of the 2,731 having between twenty-six and 100 beds, 1,031, or 38 per cent., have nurse training schools, and of the 1,324 having twenty-five beds or less, 261, or 9.6 per cent., reported having nurse training schools.

Among the different types of hospitals, those having the larger proportion of nurse training schools, are, naturally, the general hospitals—those that care for all classes of

TABLE 9.—*Counties With and Without Hospitals*

	Total Counties	Counties Having Some Kind of Hospital for the People of the County		Counties Not Having a Hospital for the People of the County		Counties Maintaining General Hospitals, 1923	Counties Having Only Individually Owned Hosp., 1923
		1920	1923	1920	1923		
Alabama	67	17	21	50	46	5	8
Arizona	14	12	11	2	3	6	0
Arkansas	75	18	25	57	50	2	12
California	58	46	52	12	6	40	1
Colorado	63	29	36	34	27	9	10
Connecticut	8	8	8	0	0	2	0
Delaware	3	1	2	2	1	1	0
Dist. Columbia	1	1	1	0	0	0	0
Florida	54	13	18	41	43	3	4
Georgia	152	28	32	124	128	2	16
Idaho	41	15	22	26	22	3	6
Illinois	102	61	66	41	36	20	12
Indiana	92	53	54	39	38	23	5
Iowa	99	56	72	43	27	8	21
Kansas	105	45	53	60	52	6	11
Kentucky	120	32	39	88	81	6	12
Louisiana	64	16	23	48	41	0	5
Maine	16	14	16	2	0	3	3
Maryland	24	13	16	11	8	4	1
Massachusetts	14	13	13	1	1	4	0
Michigan	83	48	67	35	26	18	10
Minnesota	86	63	67	23	19	17	18
Mississippi	82	22	27	60	55	3	4
Missouri	115	26	37	89	78	5	17
Montana	44	28	29	16	25	5	4
Nebraska	93	35	44	58	49	2	26
Nevada	16	13	13	3	4	6	4
New Hampshire	10	10	10	0	0	2	0
New Jersey	21	19	19	2	2	10	2
New Mexico	28	15	14	13	17	3	1
New York	61	53	57	8	5	28	2
North Carolina	100	40	45	60	55	3	15
North Dakota	53	24	26	29	27	3	6
Ohio	88	55	63	33	25	14	12
Oklahoma	77	27	33	50	44	4	16
Oregon	36	23	26	13	10	2	3
Pennsylvania	67	54	54	13	13	12	2
Rhode Island	5	3	4	2	1	0	1
South Carolina	45	18	20	27	26	4	5
South Dakota	69	21	23	48	46	2	6
Tennessee	96	22	22	74	73	3	6
Texas	251	64	79	187	175	11	23
Utah	29	9	11	20	18	4	3
Vermont	14	10	10	4	4	1	1
Virginia	100	29	31	71	69	3	5
Washington	39	24	30	15	9	6	6
West Virginia	55	27	26	28	29	1	5
Wisconsin	71	45	51	26	20	29	6
Wyoming	21	14	12	7	12	4	2
Totals	3,027*	1,332	1,531	1,695	1,545	361	348
Percentage	.....	44.0	49.6	56.0	50.4	11.7	11.3

* There were 3,027 counties in 1920; 3,069 in 1923.

patients, including frequently acute nervous and mental and contagious patients. The number of training schools connected with each of the several types of hospitals is shown as follows:

Type of Hospital	Number of Hospitals	Having Nurse Training Schools	Per Cent.
General	3,793	1,639	43.2
Nervous and Mental	506	108	18.2
Tuberculosis	476	31	6.5
Maternity	262	44	16.8
Industrial	162	24	14.8
Children's	81	19	23.5
Isolation	111	2	1.8
Convalescent and Rest	137	4	2.9
Eye, Ear, Nose and Throat	58	8	13.8
Orthopedic	37	4	10.8
Skin and Cancer	32	2	6.3
All others	1,068	79	7.3
Total	6,830	1,964	28.8

Nursing service in a hospital is a very large and indispensable part of the service and the hospital cannot get along without it, yet the hospital is not necessarily duty bound to maintain a nurse training school, and it is evident that a large majority of the institutions secure their nursing force in other ways.

The number of nurse training schools for different years since 1900 is as follows:

Years	Training Schools
1900	432
1905	862
1910	1,129
1915	1,509
1920	1,755
1923	1,964

The figures for 1923 are our own; those for previous years are from the report of the Committee on Nursing Education (Nursing and Nursing Education in the United States, New York, the Macmillan Company, 1923).

The latest available data on nurse training schools accredited by the state boards places the number so accredited at 1,586. Granting the accuracy of this figure there are at least 378 training schools that are not accredited. These unaccredited schools, while they aid the hospitals with which they are maintained in keeping their supply of nurses, are nevertheless somewhat of a menace to inexperienced young people who may take courses for which credit is not given by any state board.

Pupil Nurses

The number of pupil nurses in the 1,964 training schools is not definitely known, but in 1921, according to the report of the Committee for the Study of Nursing Education, there were 55,000 pupil nurses in hospitals and approximately 15,000 were being graduated each year. The total number of nurses in the United States, registered and unregistered in hospitals and out, amounts to one nurse for about 294 population. The number of registered nurses as reported was 149,128.

Counties With and Without Hospitals

In 1923, of the 3,066 counties in the United States (see Table 9), 1,521, or 49.6 per cent., had some kind of a hospital, as compared with 44.0 per cent. (of the 3,027 counties), in 1920.[1]

In 1920, only two states, Connecticut and New Hampshire, had at least one hospital in every county; to these, a third state, Maine, may now be added. Some of the other counties have federal or state institutions, but these are not intended to serve the people of the community. Occasionally, also, even populous counties, although having no hospitals within their borders, are nevertheless well supplied with hospital service, because hospitals in adjoining counties are easily reached—thanks to good roads and other means of transportation.

An evidence of the intelligent placing of hospitals in the past few years is the fact that, since 1920, hospitals have been

1. J. A. M. A. **76**: 1084 (April 16) 1921.

Table 8.—*Clinical Laboratories, X-Ray Departments, and Nurse Training Schools in Hospitals*

Marginal Number	State	25 Beds or Less				26 to 100 Beds				101 to 300 Beds				Over 300 Beds				Number of Beds Not Reported	Totals				Marginal Number
		Total Hospitals	Clinical Laboratories	Roentgen Ray Departments	Nurses' Training Schools	Total Hospitals	Clinical Laboratories	Roentgen Ray Departments	Nurses' Training Schools	Total Hospitals	Clinical Laboratories	Roentgen Ray Departments	Nurses' Training Schools	Total Hospitals	Clinical Laboratories	Roentgen Ray Departments	Nurses' Training Schools		Total Hospitals	Clinical Laboratories	Roentgen Ray Departments	Nurses' Training Schools	
1	Alabama	34	13	8	8	38	23	21	22	6	5	5	5	3	2	1	2	4	85	43	35	37	1
2	Arizona	27	10	7	6	29	12	8	2	4	3	1	..	2	2	2	..	4	66	27	18	8	2
3	Arkansas	23	12	9	3	30	13	15	14	6	4	4	2	1	1	1	1	2	62	30	29	20	3
4	California	207	46	60	9	145	62	68	26	55	41	43	28	19	14	12	6	8	434	163	184	69	4
5	Colorado	50	13	15	4	40	20	15	11	20	17	13	11	3	3	3	..	..	113	53	46	26	5
6	Connecticut	27	9	5	4	26	11	14	9	23	18	17	12	6	5	4	4	4	86	43	40	29	6
7	Delaware	4	1	1	..	7	5	4	3	1	1	1	1	1	1	..	..	2	15	8	6	4	7
8	Dist. Columbia	15	2	2	1	6	1	2	2	11	10	11	10	5	4	4	3	2	39	17	19	16	8
9	Florida	30	8	8	3	24	14	16	19	4	3	2	1	3	1	..	1	1	62	26	26	24	9
10	Georgia	34	13	7	4	41	25	23	21	14	7	7	7	2	2	1	2	1	92	47	38	34	10
11	Idaho	32	12	11	2	16	11	13	10	4	3	3	..	1	..	..	..	..	53	26	27	12	11
12	Illinois	126	28	31	10	180	84	79	59	66	44	44	35	24	18	17	15	2	398	174	171	119	12
13	Indiana	80	10	16	7	61	29	27	22	25	17	18	12	11	7	6	2	2	179	63	67	43	13
14	Iowa	97	41	45	11	78	51	48	42	18	12	13	9	7	6	4	5	1	201	110	110	67	14
15	Kansas	74	27	27	22	58	37	34	31	9	5	7	6	6	5	2	1	2	149	74	70	60	15
16	Kentucky	55	11	11	3	47	23	20	10	8	5	6	4	7	5	5	2	4	121	44	42	19	16
17	Louisiana	33	12	10	1	28	14	13	7	12	7	7	5	4	4	3	2	3	80	37	33	15	17
18	Maine	38	5	5	7	30	19	18	16	6	6	6	6	4	2	1	2	..	78	32	30	31	18
19	Maryland	38	3	1	3	47	19	14	11	17	13	12	11	11	8	7	4	..	113	43	34	29	19
20	Massachusetts	133	24	13	5	117	57	49	48	49	40	39	32	25	19	17	16	..	324	140	118	101	20
21	Michigan	109	30	34	8	77	33	34	21	20	14	14	11	17	14	11	9	1	224	91	93	49	21
22	Minnesota	115	41	40	14	74	35	32	29	28	22	23	19	11	8	7	6	1	229	106	102	68	22
23	Mississippi	23	11	12	7	32	22	17	21	5	4	4	3	4	3	3	..	..	64	40	36	31	23
24	Missouri	65	10	11	3	78	35	29	23	31	22	20	14	10	8	7	2	3	187	75	67	42	24
25	Montana	31	12	10	1	30	9	14	13	9	5	5	5	1	1	1	..	..	71	27	30	19	25
26	Nebraska	95	27	27	4	36	21	19	16	9	7	7	5	5	3	2	1	..	145	58	55	26	26
27	Nevada	17	5	6	1	8	4	2	1	1	..	1	..	..	..	..	..	..	26	9	9	2	27
28	New Hampshire	25	6	3	4	23	12	10	13	3	2	2	1	3	1	1	1	1	55	21	16	19	28
29	New Jersey	44	6	10	2	68	33	29	20	43	31	31	25	13	7	7	6	1	169	77	77	53	29
30	New Mexico	22	9	3	5	27	17	16	6	2	1	1	..	2	1	1	..	1	54	28	21	11	30
31	New York	189	20	20	5	265	100	97	58	119	79	81	54	64	50	44	33	9	646	249	242	150	31
32	North Carolina	48	22	16	14	78	47	42	45	5	4	4	3	5	3	1	2	..	136	76	63	64	32
33	North Dakota	22	8	5	1	22	11	10	12	5	5	5	5	2	1	1	..	..	51	25	21	18	33
34	Ohio	128	28	29	8	115	64	63	57	38	33	31	24	18	14	11	11	2	301	139	134	100	34
35	Oklahoma	41	14	14	11	45	28	27	29	4	3	2	1	4	4	2	1	1	95	49	46	42	35
36	Oregon	35	4	6	..	35	16	16	12	5	4	4	1	5	3	3	1	..	80	27	29	14	36
37	Pennsylvania	134	27	21	7	186	113	103	87	82	74	69	65	41	31	19	21	6	448	245	212	180	37
38	Rhode Island	16	1	1	..	14	4	4	3	5	3	1	2	6	5	3	2	..	41	13	9	7	38
39	South Carolina	19	6	5	3	27	14	11	13	4	1	..	1	3	3	3	1	..	53	24	19	18	39
40	South Dakota	21	12	9	7	27	18	17	19	3	3	3	3	3	2	2	..	1	55	35	31	29	40
41	Tennessee	39	13	8	7	36	21	19	21	14	12	11	8	6	4	5	1	..	95	50	43	37	41
42	Texas	91	27	19	14	89	45	39	33	17	12	12	10	11	8	7	4	..	208	92	77	61	42
43	Utah	24	9	6	..	5	4	4	2	5	3	3	4	1	1	..	..	..	35	17	13	6	43
44	Vermont	16	3	..	1	16	7	10	6	2	1	1	1	2	1	..	1	..	36	12	11	9	44
45	Virginia	30	11	10	3	54	24	22	23	11	8	5	5	8	5	1	2	..	112	48	38	33	45
46	Washington	67	16	20	2	49	19	24	11	21	15	14	6	7	4	6	2	2	146	54	64	21	46
47	West Virginia	17	4	6	6	41	24	25	21	7	6	6	6	4	3	3	1	..	69	37	40	34	47
48	Wisconsin	69	23	24	9	88	48	37	25	56	21	20	16	7	4	4	1	..	220	96	85	51	48
49	Wyoming	13	5	5	1	12	8	8	6	3	2	2	..	1	..	..	..	..	29	15	15	7	49
	Totals	2,731	710	672	261	2,704	1,306	1,281	1,081	915	668	642	495	409	301	246	177	71	6,830	3,035	2,841	1,964	
	Percentages	....	2.6	24.6	9.6	....	50.5	47.4	38.1	....	72.0	70.2	54.0	....	74.0	60.1	43.3	....	....	44.4	41.5	28.8	

opened in 189 counties that formerly were without hospitals. This is placing the oil on the squeak. A continuation of this policy, it is believed, will also bring recent graduates of medical colleges into communities, rural or otherwise. They will be attracted by the splendid small hospitals in such communities.

There are 361 counties that now support hospitals by county funds and 348 counties that have within their borders only hospitals maintained privately by physicians or others, individually or in partnership. Only 50.4 per cent. of counties are now without hospitals, as compared with 56 per cent. in 1920.

which were reported by 1,544 hospitals, in addition to their internships.

Interns and Resident Physicians

	Number of Interns	Number of Resident Physicians	Total
Federal hospitals	46	652	698
State hospitals	306	985	1,291
All other hospitals	3,669	2,275	5,944
Totals	4,021	3,912	7,933

TABLE 10.—*Demand and Supply of Interns in Hospitals*

Marginal No.	State	No. of Hospitals Having Interns	General		Nervous and Mental		Tuberculosis		Industrial		Maternity and Children		Eye, Ear, Nose and Throat		Isolation		Federal		Other Hospitals		Total		Marginal No.
			Interns Needed	Supply	Interns Needed	Supply	Interns Needed	Supply	Interns Needed	Supply	Interns Needed	Supply	Interns Needed	Supply	Interns Needed	Supply	Interns Needed	Supply	Interns Needed	Supply	Interns Needed	Supply	
1	Alabama	15	27	21	2	..	1	1	7	7	..	..	..	..	..	..	..	..	..	..	37	29	1
2	Arizona	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....	2
3	Arkansas	7	12	10	1	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	14	12	3
4	California	31	166	158	3	3	1	..	..	..	8	8	..	..	..	..	6	6	..	..	184	175	4
5	Colorado	18	32	28	2	2	..	..	..	..	..	..	..	..	..	..	..	..	2	2	36	32	5
6	Connecticut	16	67	56	7	5	..	..	..	..	..	..	..	..	12	1	..	..	..	..	86	62	6
7	Delaware	3	6	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	4	7
8	Dist. Columbia	15	62	58	7	7	..	..	..	..	4	4	3	3	..	..	19	19	..	..	95	91	8
9	Florida	5	6	6	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	8	6	9
10	Georgia	16	47	43	1	1	..	..	2	2	..	..	..	..	..	..	..	..	..	..	50	46	10
11	Idaho	..	....	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....	11
12	Illinois	73	361	233	1	1	..	..	8	8	38	23	12	10	3	3	17	17	9	9	449	404	12
13	Indiana	20	51	45	4	3	..	..	1	..	..	..	..	..	..	..	..	..	..	..	56	48	13
14	Iowa	18	47	39	9	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	56	45	14
15	Kansas	12	25	18	4	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	29	20	15
16	Kentucky	10	30	25	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32	27	16
17	Louisiana	11	76	76	..	..	..	..	3	2	..	..	..	..	..	..	4	4	..	..	83	82	17
18	Maine	4	10	10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10	10	18
19	Maryland	26	142	135	4	4	5	5	..	..	4	4	2	2	1	1	..	..	7	7	165	158	19
20	Massachusetts	67	243	226	29	11	..	..	..	..	48	35	10	10	..	..	5	5	5	5	340	292	20
21	Michigan	24	180	164	..	..	..	..	12	2	..	..	1	1	30	1	..	..	1	1	224	175	21
22	Minnesota	27	117	112	13	5	5	5	3	2	3	3	4	4	..	..	7	3	10	7	162	141	22
23	Mississippi	6	12	5	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	16	9	23
24	Missouri	31	148	139	..	..	..	..	6	5	8	8	..	..	..	..	..	..	3	3	165	155	24
25	Montana	6	2	1	..	..	..	..	5	3	..	..	..	..	..	..	2	..	1	1	10	5	25
26	Nebraska	10	38	36	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	38	36	26
27	Nevada	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	27
28	New Hampshire	1	....	....	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	28
29	New Jersey	39	112	106	8	8	..	..	..	..	7	9	..	..	2	2	..	..	..	..	129	118	29
30	New Mexico	2	....	....	..	..	..	..	1	1	..	..	..	..	..	..	4	1	..	..	5	2	30
31	New York	144	738	704	42	34	18	17	6	6	121	61	35	35	26	13	9	8	21	14	1,026	892	31
32	North Carolina	18	17	11	..	..	..	..	..	..	3	3	..	..	..	..	..	..	1	1	21	15	32
33	North Dakota	....	....	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....	33
34	Ohio	42	188	169	3	2	1	1	..	..	15	7	..	..	..	..	1	1	..	..	208	180	34
35	Oklahoma	5	16	10	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	17	11	35
36	Oregon	7	17	14	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	18	15	36
37	Pennsylvania	98	487	430	7	5	6	6	7	7	31	24	3	3	11	7	..	..	2	2	554	484	37
38	Rhode Island	6	30	21	3	2	..	..	..	..	6	2	..	..	..	..	..	..	..	..	39	25	38
39	South Carolina	4	4	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	3	39
40	South Dakota	..	....	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....	40
41	Tennessee	22	67	51	4	4	2	2	..	..	..	..	..	..	..	..	..	..	..	..	73	57	41
42	Texas	21	55	41	4	1	2	2	2	2	..	..	..	..	..	..	1	1	..	..	64	47	42
43	Utah	3	9	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	5	43
44	Vermont	3	9	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	9	44
45	Virginia	21	32	25	3	1	11	7	1	1	..	..	..	..	..	..	..	..	..	..	47	34	45
46	Washington	7	10	9	..	..	2	2	2	1	..	..	..	..	..	..	..	..	..	..	14	12	46
47	West Virginia	6	7	7	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	9	8	47
48	Wisconsin	22	45	33	3	1	..	..	..	..	2	2	3	..	..	..	..	..	..	..	52	36	48
49	Wyoming	2	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	49
	Totals	940	3,758	3,399	174	116	55	49	70	51	298	186	73	69	95	34	75	65	63	52	4,656	4,021	
	Shortage of interns, per cent.			9		33		11		27		38		5		64		13		18		14	

TABLE 11.—*Hospitals Approved for Intern Training*

Year	Section I			Section II			Section III			Totals		
	No. of Hospitals	Total Beds	Total Internships	No. of Hospitals	Total Beds	Total Internships	No. of Hospitals	Total Beds	Total Internships	No. of Hospitals	Total Beds	Total Internships
1914	508	88,000	2,067	35	53,088	229	60	8,495	208	603	150,183	3,095
1916	519	92,464	2,737	57	85,654	903	111	20,187	328	687	198,305	3,368
1920	469	103,997	2,990	25	41,722	72	99	14,135	388	593	159,854	3,420
1921	482	106,868	2,992	26	42,944	88	102	15,990	420	610	166,802	3,470
1923	510	121,740	3,119	30	49,830	87	120	17,279	514	660	188,849	3,690

DEMAND AND SUPPLY OF INTERNS

In Table 10 are presented statistics showing the present demand and supply of interns in 940 hospitals which report that they have or desire to have interns. The figures given refer to "internships" in the sense of physicians, mostly recent graduates, who are serving mainly from an educational motive, and do not include the 3,912 residentships

In 1914 all the hospitals using or seeking interns reported a total demand of only 3,095 interns, at a time when there were 3,594 graduates, a surplus of 499—taking it for granted that each graduate desired an internship. Contrasted with that situation, in 1923, the total annual demand is for 4,656 interns, with a supply of only 3,120 graduates—an apparent shortage of 1,536 interns if every graduate accepted an intern-

ship. It is not surprising, therefore, that the hospitals that require the 4,656 interns report that they have secured only 4,021, leaving a shortage of 635. But this is only a portion of the total shortage since the number of interns now in hospitals, 4,021, exceeds the 3,120 graduates in 1923 by 901, making a total shortage of 1,536. Even if every graduate of 1923 accepted an internship, therefore, at least 901 internships must have been filled by other than recent graduates. These 901 internships were filled partly (*a*) by interns held over from the preceding year, (*b*) by those having previously completed a general internship, and (*c*) by practicing physicians serving internships for review and additional experience.

It is evident that the demand for interns can no longer be entirely supplied by recent graduates, since such large numbers of graduates are not essential to keep the country well supplied with physicians. That the shortage of interns has passed the acute stage is apparent from (*d*) the increased use of resident physicians, now numbering 3,912, and (*e*) an extension of internships in some of the hospitals to two or more years. The increased numbers graduating from medical schools will help to relieve the situation. The enrolments in medical schools indicate that in 1924 there will be about 3,800 graduates and about 4,200 in 1925.

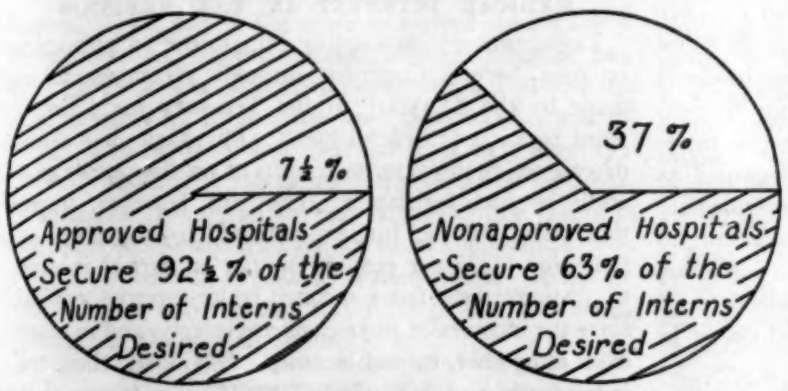
HOSPITALS APPROVED FOR INTERN TRAINING

As shown in Table 11, the Council on Medical Education and Hospitals issued a list of hospitals providing internships in 1914. Since that time the list has been revised from time to time and lists of "Hospitals Approved for Intern Training" were published in 1916, 1920, 1921 and 1923. In 1914, it was necessary to include in the list practically every hospital that expressed a desire for interns, but on account of the wide difference in opportunities afforded interns in different hospitals and with the increasing demand for interns, a gradual and essential revision of the list was made possible. Hospitals that have made the requisite provision whereby the intern could secure a reasonable amount of experience and instruction have been added and the names of those that have fallen below the required standard, or have ceased to desire interns have been omitted. These revisions were based on data supplied by the hospitals themselves, as well as through inspections by hospital committees of the state medical associations and on reliable information otherwise gained regarding the educational opportunities afforded to interns. Of the 603 hospitals listed in 1914 there are but 314 that now remain on the list approved for intern training.

The list has been published in THE JOURNAL, in the American Medical Directory, and also as a separate pamphlet in which form it has been widely distributed among hospitals, medical colleges and prospective interns. The number of hospitals on the approved list of the Council at present is 660, which have a capacity of 188,849 beds and provide places for 3,690 interns. Of the accredited institutions, 510 are general hospitals, thirty are hospitals for the insane and 119 are other special hospitals.

The list has served in helping graduates to find acceptable internships and in assisting hospitals to obtain interns.

CHART II.—*The Shortage of Interns*


7½ %
Approved Hospitals Secure 92½% of the Number of Interns Desired
37 %
Nonapproved Hospitals Secure 63% of the Number of Interns Desired

Approved hospitals desire	3,690 interns	Nonapproved hospitals desire	966 interns
They have	3,413 interns	They have	608 interns
Their shortage is	277 or only 7½%	Their shortage is	358 or 37%

TABLE 12.—*Length of Internships in Approved Hospitals*

Length in Months	General Hospitals	Nervous and Mental Hospitals	Other Special Hospitals	Totals
30	1	..	..	1
26	1	..	..	1
24	34	..	3	37
18 to 24	3	..	..	3
23	1	..	..	1
21	4	..	..	4
15 or 20	..	..	1	1
20	2	..	..	2
18	24	..	5	29
12 or 18	6	..	..	6
16	8	..	..	8
15	2	..	..	2
14	1	..	..	1
12	396	14	58	468
Less than 12	3	4	41	48
Indefinite	24	12	12	48
Total hospitals	510	30	120	660

The hospitals of 100 beds or over now on the approved list are more than sufficient to absorb the available supply of interns. Hospitals of less than 100 beds are not in position to provide a rotating service in medicine, surgery, obstetrics and laboratory work.

Women interns are admitted in 181 approved hospitals and in 1923, 214 women interns were reported.

The length of intern services in months or years required by the hospitals on the approved list is shown in Table 12.

The shortage of interns in approved and nonapproved hospitals is shown in Table 13 and in Chart 2.

THE INTERN PROBLEM

One of the most important problems related to hospitals at the present time is the inadequate supply of recent graduates to fill the greatly increased demand for interns. The statistics herewith presented deal to a certain extent with this problem. A review of the statistics, however, leads us to believe that the evident hopelessness of obtaining interns is reflected in the rather unsatisfactory replies obtained from hospitals on this particular question. The extreme importance of this problem has made necessary a further investigation in regard to the demand and supply of interns and to the advisability of providing trained hospital assistants, who will perform part of the duties which at present devolve on the intern. A later report, therefore, will be made on this particular phase of the hospital situation.

TABLE 13.—*Shortage of Interns*

	Approved Hospitals	Non-Approved Hospitals	Total
Hospitals having or desiring interns	660	280	940
Number of internships available	3,690	966	4,656
Number of interns serving in hospitals*	3,413	608	4,021
Shortage of interns	277	358	635
Percentage of shortage	7.5	37	13.6

* Including only physicians serving from an educational motive and not including resident physicians, which number 3,912

APPRECIATION

We wish to express our acknowledgments to the superintendents of the various hospitals for their splendid cooperation in furnishing the necessarily detailed reports, which have undoubtedly required a great deal of time and thought and without which the presentation of these valuable statistics would not have been possible.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - - Five dollars per annum in advance

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SATURDAY, JANUARY 12, 1924

CARAMELIZED CARBOHYDRATES IN DIABETES

Woodyatt has defined the utilization of sugar in the body as the sum of the processes by which a substance such as glucose is converted into something else within the cells. A definition of this sort includes not only oxidative processes that end with the production of carbon dioxid and water in the organism but also a variety of possible preliminary reactions. There is little doubt that, in the metabolism of sugar, intermediate products are formed, and that the liberation of energy by combustion affects the latter rather than the sugar molecules as such. Lactic acid has long been regarded as an important substance concerned with the intermediate metabolism of the carbohydrates. It is important to note that the failure to effect the utilization of glucose, such as is observed in diabetes, does not extend to all of its derivatives. Accordingly, the essential defect in the organism of the diabetic patient may involve an inability to give rise to the usual preliminary intermediate products which are the real substrates of the subsequent oxidative utilization of carbohydrate in the organism. Woodyatt prefers to express the metabolic error in diabetes as a "failure of glucose dissociation."

Considerations of this sort presumably have been responsible for the attempt to secure, for feeding, materials analogous to the suspected intermediate products of normal glucose metabolism, in the hope that with them as the starting point even the diabetic organism might be able to proceed with the subsequent oxidative changes in a normal way. There is no indication, at least, that the vague "suboxidation" of earlier writers plays any part in the perverted metabolism of the diabetic organism, so far as availability of oxygen in the tissues is concerned. In 1914, Grafe[1] of Heidelberg recommended the use of caramel in the diabetic dietary, this substance being a derivative of sugars that has lost some of its carbohydrate characteristics. Several clinical reports supported the view that caramelized sugars have comparatively little glycosuric effect and may also influence ketosis favorably. Recently, attempts have been made to apply the process of caramelization to starch-containing preparations also. The procedure seems to involve technical difficulties in securing palatable products that have actually lost their chemical identity as starch. The outcome[2] seems to have been sufficiently promising to warrant careful consideration of the possibilities. There is evidence that the "roasted" or caramelized carbohydrate is actually absorbed, and that it leads to less hyperglycemia and glycosuria than corresponding quantities of untreated starch.

The prospects of thus securing suitable dietary substitutes for starch and sugar still rest on an empiric basis, though the principle underlying their use is a rational one. The tremendous success that has attended the use of insulin in diabetes must not be allowed to obscure the continued need of suitable dietotherapy. If the chemist can anticipate Nature by furnishing fat-like and sugar-like derivatives that even the impaired diabetic organism can actually utilize, much may be gained.

1. Grafe, E.: Deutsch. Arch. f. klin. Med. **116**: 437, 1914.

2. Grafe, E.: Ueber die Behandlung Zuckerkranker mit gerösteten Stärkearten, I, Deutsch. Arch. f. klin. Med. **143**: 1, 1923, Grafe, E., and Otto-Martiensen: Ibid. **143**: 87, 1923, Magin, H., and Turban, K.: Ibid. **143**: 97, 1923.

MEDICAL INTEREST IN TAX REVISION

Legislation of outstanding importance to physicians is now before Congress through recommendations made by the Secretary of the Treasury for a downward revision of federal taxes. Physicians will share, of course, in the benefits conferred on the people generally by such legislation. They are, however, among those who will be further benefited by the proposed reduction of 25 per cent. in the tax on earned income, as distinguished from income from invested capital, since the incomes of physicians are largely, and in many cases altogether, earned incomes. Obviously, then, we, individually and collectively, should interest ourselves in bringing about this reduction.

Secretary Mellon makes no specific recommendation that will entitle a physician to deduct as one of his professional expenses in computing his federal income tax the cost of attending meetings of medical societies and of postgraduate study. His recommendations, however, are necessarily general in character, and possibly no inference should be drawn from the omission. It may be that certain proposed changes in the phraseology of the law are intended to afford relief, but it will be better if phraseology is used that will make relief certain.

Unfortunately, the recommendations submitted by the secretary do not provide for a reduction to a prewar basis of the now indefensible war tax exacted from physicians under the Harrison Narcotic Law. Physicians have never complained of the original levy, one dollar a year, submitting willingly to it and to the inconvenience imposed by the law, for the sake of the

good sought to be accomplished. Nor did we complain when, during the war, the levy was trebled for revenue purposes only. We do, however, object to being compelled to bear this burden now that the financial necessity for it has gone, and we ask that the tax be reduced at least to the amount originally fixed. There is no time better than the present for urging our demands, and we must seize the opportunity.

Relief from some of our tax burdens is now in sight, through the proposed reduction in the tax rate on earned incomes, and through the opportunities that are open to procure a reduction of the tax under the Harrison Narcotic Law and statutory provision that will permit the deduction of professional traveling expenses and the expenses of postgraduate study in the computation of the physician's net income. However, if physicians want such relief, they individually and collectively must make their influence felt. Every physician should write to his representatives, both congressman and senator, urging favorable action. Every county society should adopt resolutions expressive of its views and send copies to the Committee on Ways and Means, House of Representatives, Washington, D. C., and to the more interested senators and representatives. These societies should authorize and direct their proper officers and committees to follow up such resolutions, to see that they are effective, and to report back the results of their work. Later, when the bill has passed the House of Representatives and has gone to the Senate, appropriate action can be taken to acquaint the Senate with the views of the medical profession concerning the bill as it then stands. Relief in this manner may be obtained through our concerted, prompt, whole-hearted action.

THE FACTOR OF INTESTINAL ABSORPTION IN RICKETS

That the last few years have greatly enriched medicine with important facts in regard to rickets must be apparent to every reader of THE JOURNAL. In an admirable recent review of current knowledge of this subject, Park[1] characterized rickets as a disturbance in the metabolism of the growing organism of such a nature that the salt equilibrium, particularly as regards the calcium and phosphorus, in the circulating fluids is disturbed, and lime salts no longer deposit in the bones. According to Park's view, lime salts may not deposit because the ionized calcium in the blood is low, or because the ionized phosphate is low, or because both are low. When, however, the calcium in the blood is low, the formation of new bone and the destruction of old calcified bone (*Umbau*) is greatly accelerated, and the pathologic process takes on a distinctive character. But no fundamental differences exist between the low calcium and the low phosphorus forms of the disease. Increasing knowledge concerning rickets has made it necessary, Park adds, to broaden the view with regard to the characteristic pathologic changes, and to admit to the disease all disturbances in metabolism in which lime salts cease to be deposited in the bones and cartilage. The first detectable signs of rickets are probably a diminution of the inorganic phosphorus or calcium of the blood.

With respect to the relief of such a situation, the newer knowledge has also incorporated certain facts that seem to be well established as the result of clinical observation and investigation. There are two demonstrable factors, the one in certain types of radiant energy, the other in an unknown form in certain foods, either of which is capable of preventing rickets from developing, or from continuing if already established. The metabolism studies on infants with active rickets have shown that they fail to retain calcium and phosphorus, even though adequate amounts may be present in the diet. This has been particularly emphasized by the recent observations of Orr, Holt, Wilkins and Boone[2] at the Johns Hopkins Hospital. Exposure to ultraviolet rays improves the retention of calcium and phosphorus markedly, even when the quantities furnished by the intake have not been increased. One is thus brought face to face with the cause of such better utilization that is independent of the dietary intake. The Baltimore pediatricians have arrived at the significant conclusion that the effective radiations act by increasing the absorption of calcium and phosphorus from the intestine. It appears likely that absorption of these elements may occur in excess of the amounts that can be utilized for calcification. This slight excess is then excreted in the urine. It must be remembered, however, that, in contrast to several of the commonly occurring elements, calcium and phosphorus can be excreted by the bowel as well as by the kidneys, so that the antirachitic factors—those that promote better retention—may perhaps also act by decreasing excretion from the intestine. On this basis we should have to assume that in active rickets considerable amounts of calcium and phosphorus are absorbed from the bowel and reexcreted into it, and that ultraviolet irradiation prevents much of this abnormal reexcretion. The increased amounts of the two elements found in the urine after ultraviolet irradiation are not out of accord with such an hypothesis.

These views place emphasis not so much on the skeletal structures in which bone formation proceeds as on the absorption of calcium and phosphorus from the intestine. The healing effects of both cod liver oil and ultraviolet rays appear to be due to their ability to promote absorption from the intestine. In the eyes of the Baltimore school of investigators, the picture of the rachitic disturbance has now become pictured as fol-

1. Park, E. A.: The Etiology of Rickets, Physiol. Rev. 3: 106 (Jan.) 1923.

2. Orr, W. J.; Holt, L. E., Jr.; Wilkins, Lawson; and Boone, F. H.: The Calcium and Phosphorus Metabolism in Rickets, with Special Reference to Ultraviolet Ray Therapy, Am. J. Dis. Child. 26: 362 (Oct.) 1923.

lows: The primary difficulty, as yet unexplained, is this defect in the capacity of the intestine to absorb calcium and phosphorus. The low concentrations of these elements in the serum and the defective calcification ensuing are the direct results of this condition. When treatment is instituted, either with cod liver oil or with ultraviolet rays, although no change is made in the calcium and phosphorus of the diet, absorption of these elements from the intestine occurs much more readily. Their cencentration in the blood serum rises until the deposition of calcium phosphate in the bones becomes possible. Ultraviolet rays admittedly cannot penetrate to the lining membrane of the alimentary tract. One must assume, therefore, that through the action of the radiations on the skin or on the blood in the capillaries of the skin, the physical or chemical condition of the blood is in some way altered. As a result of this alteration, a greater absorption of calcium and phosphorus from the intestine is produced.

CYSTINURIA

Cystinuria has long been recognized as a rare, peculiar anomaly of metabolism which ordinarily produces no noteworthy disturbance in the person involved unless it leads to calculi in the urinary tract. In fact, the only recognized symptoms of cystinuria are those of renal stone. The calculi tend to come in "showers," usually after a period of high protein ingestion. Alsberg and Folin [1] demonstrated that the amount of cystin excreted in the urine, in a case of cystinuria, varied directly with the amount of protein consumed. They do not believe that there are different degrees of severity of the disease, but that the amount of the sulphur-containing amino-acid cystin excreted depends on the protein intake plus the protein catabolized in the wear and tear of the body tissues. For this reason, it is not possible to get the urine in cystinuria free from this amino-acid. On a diet that contained virtually no protein, the amount of cystin excreted was small. At the end of thirteen days, however, the patient was not cystin-free.

In diabetes, a condition in which sugar is not consumed properly in the organism, it is not uncommonly observed that fat likewise fails to experience a normal metabolism. Somewhat analogously, it has been suggested that in cystinuria it may happen that other amino-acids also are not properly transformed into their metabolic end-products. An intimation of this was furnished by Abderhalden's [2] finding of leucin and tyrosin in the urine in cystinuria, leading to the conclusion that this condition depends on a general abnormality of protein metabolism. The latest studies of Looney, Berglund and Graves [3] at the Harvard Medical School, however, show that their cystinuria patients were able to catabolize amino-acids, with the exception of cystin, as well as normal persons. In other words, the excretion of cystin is not simply an index of a general disturbance in the metabolism of the amino-acids, but a definite entity confined to cystin. Like their predecessors, they have found that the total amount of cystin excreted depends on two factors: a relatively small but constant amount derived from the endogenous metabolism, and a large fraction, which varies in proportion to the protein intake. In harmony with earlier experiments, the Harvard biochemists have also observed that when cystin itself is fed as the free amino-acid, it is utilized by the cystinuric patient, and the sulphur in it is excreted as inorganic sulphate. This leads one to conclude that the sulphur in the food is not absorbed in the form of free cystin, as the cystin in the protein molecule is not utilized unless the protein is previously hydrolyzed. The administration of sodium bicarbonate causes a decrease in the elimination of cystin. This fact, together with the reduction in the protein intake to the lowest feasible level, forms the basis for current methods of the treatment of cystinuria.[4]

1. Alsberg, C. L., and Folin, Otto: Am. J. Physiol. **14**: 54, 1905.
2. Abderhalden, Emil: Ztschr. f. physiol. Chem. **104**: 129, 1919.
3. Looney, J. M.; Berglund, H., and Graves, R. C.: A Study of Several Cases of Cystinuria, J. Biol. Chem. **57**: 515 (Sept.) 1923.
4. Compare Smillie, W. G.: Treatment of Cystinuria, Arch. Int. Med. **16**: 503 (Sept.) 1915.

Current Comment

CHEMICAL FOUNDATION WINS

Until six years ago, America was almost wholly dependent on Germany for its supply of synthetic chemicals. In 1917, after the United States entered the war, Congress passed a trading-with-the-enemy act which provided for the seizure of German-owned patents by the Alien Property Custodian and the operation of these patents by American citizens. At this point America's chemical independence began. Later, in order to establish a permanent American chemical industry, the Alien Property Custodian, on executive order of President Wilson, sold 4,700 German chemical patents [5] for the nominal sum of $250,000 to the Chemical Foundation, Inc. This quasipublic corporation agreed, in turn, to license any American firm that could present evidence of its reliability in chemical manufacture, and it was agreed that no firm could have a monopoly on any patent. Through the influence of this action, physicians today may obtain different brands of arsphenamin instead of one proprietary "salvarsan"—and at competitive prices. The same is true of other useful synthetics. The Chemical Foundation since then has served as a bulwark for chemical independence in America. About a year and a half ago, President Harding, on advice of the Department of Justice, instructed the Alien Property Custodian to take steps to secure the return of all patents sold to the Chemical Foundation. At that time THE JOURNAL said: [6] "No fault can be found with the demand of the President for an investigation if he has evidence that indicates

5. The number of patents that have been licensed to the trade is stated to be only 422.
6. Is the German Domination of Our Drugs Again Imminent? J. A. M. A. **79**: 305 (July 22) 1922.

that the patents were sold at too low a figure. Certainly a clean cut investigation should be most welcome, particularly to the adherents of the Chemical Foundation. . ." In due time, suit was instituted by the government in the United States District Court of Delaware; the decision of the court was handed down, January 3. In the decision, which is thorough and exhaustive, virtually every argument of the government seems to have been overthrown by the evidence of the defense. Of particular interest to physicians is the evidence concerning the nonworkable patent papers obtained by German firms as exemplified by salvarsan. Judge Morris quotes from the testimony of Dr. G. W. McCoy, director of the Hygienic Laboratory, given before a congressional committee:

> I have talked of that matter with some of the most able chemists in the United States, and they all say that the description in the patent is so sketchy, and there is so much necessary that is omitted, that a well qualified chemist cannot proceed and produce the material. He has to do a great deal of experimenting. I know one large, well equipped manufacturing house commanding the best chemical talent money can secure, that spent about eighteen months before they turned out the first commercial batch of salvarsan.

Continuing, Judge Morris states that this view was established by evidence given before him in the Chemical Foundation suit; he concludes, therefore, that, because of the financial risks and hazards due to the obvious circumvention of our patent laws by the Germans, the certain affirmative value of the patents sold "was too slight and problematical to warrant the payment by American citizens of a sum even remotely approximating what they might have been worth to the German owners for monopolistic purposes." Judge Morris then ordered the bill of complaint filed by the government to be set aside. The Attorney-General has signified his intention of having the decision reviewed by the United States Supreme Court; at any rate, the deductions of Judge Morris will be of considerable satisfaction to American chemists. Physicians are vitally interested in the maintenance of a domestic chemical industry in order that public health may be protected and foreign domination of our therapeutics (irrespective of the country of origin) may never return.

ARE BACTERIA ANIMALS OR PLANTS?

To those who are not versed in the intricacies of modern biology, it may seem strange that there should be any uncertainty regarding the relationships of such ubiquitous organisms as the bacteria. Nevertheless, there has been not a little discussion as to whether these lowly, though dominating, forms of life are animals or plants. They were first described as animalcules; and the man on the street still delights to dub them "bugs." A biologist no less eminent than Haeckel proposed to create a new classification, *Protista*, into which category were to be placed some of the lower plants and animals that are difficult to classify, together with the bacteria. The current tendency to assign these micro-organisms to the plant world is based largely on their properties of spore formation and chemosynthesis, both recognized characteristics of plant life. The bacteria resemble some of the algae in form, mode of reproduction, and absence of a definite nucleus; yet those which possess flagella show points of resemblance with some of the protozoa. If the reader should perchance ask himself whether the discussion is worth while, he may find some encouragement in a recent suggestion by Long.[1] This bacteriologist, of the Sprague Memorial Institute at Chicago, believes that "a very useful purpose is served by the effort to fit all living beings into one or the other class so far as the evolutionary point of view is maintained, in that attention is kept focused on the root of all biologic problems." Failing to find convincing evidence for classification in either the morphologic or the physiologic aspect of the bacteria, Long has sought for chemical criteria. He recalls, from this standpoint, that the best studied of all the micro-organisms, the tubercle bacillus, contains a typical nucleic acid of the animal type, probably identical with that of the thymus, pancreas, sperm and spleen. It does not contain any nucleic acid of the known plant types. On the other hand, bacteria clearly resemble plants from the chemical standpoint in the possession of marked chemosynthetic power in nitrogen metabolism, leading to the production of such complex compounds as amino-acids and purins from no other source of nitrogen than ammonia. Other similarly conflicting, though less definite, chemical testimony might be ventured. Obviously, more evidence must be forthcoming before the final decision can be made. Meanwhile, the problem of "the lady or the tiger" can still be paraphrased in relation to bacteria into the inquiry: Are they animals or plants? We have much to learn, Long writes; but, he adds, in the meantime it is to the credit of those who have added to our knowledge of the chemistry of the tubercle bacillus that they have put on record for this bacillus far more than has been done for any other bacterium.

ELECTIVE FIXATION OF RADIUM EMANATIONS

That radium emanations have a specific effect on neoplastic and other proliferating tissues is well established, and their employment as a therapeutic agent has made rapid strides. A new and extremely valuable application of the principle concerned to the diagnosis of new growth is offered by the work of Kotzareff and Weyl.[2] They have discovered that the intravenous injection of colloidal substances, such as autoserum, charged with radium emanations results in the fixation of the emanations by embryonic or neoplastic cells, which can be detected by the effects they produce on photographic plates. Using from 1 to 10 c.c. of autoserum, which can be charged with a maximum of emanation equivalent to 25 millicuries, they found that within the first few minutes after the injection, exposure of a plate to the site of the injection yielded a picture of the heart cavities or vein into which the

1. Long, E. R.: Chemical Evidence on the Phylogenetic Classification of the Tubercle Bacillus, Am. Rev. Tuberc. **8**: 195 (Nov.) 1923.
2. Kotzareff, A., and Weyl, L.: La fixation élective des substances radium-colloidales par les cellules jeunes et néoplasiques: son importance dans le diagnostic et le traitement du cancer, Presse méd. **31**: 925 (Nov. 7) 1923.

serum had been introduced. About an hour later, the plates no longer showed any trace of the emanations in the blood vascular system. Instead, the outlines of the embryos in a pregnant guinea-pig were distinctly shown, and in the case of a man with an endothelioma of the neck the plate was found to be affected over an area that corresponded exactly to the size and location of the tumor and also to a metastasis in the orbital region. Twenty-four hours later, similar, though less distinct, impressions could still be obtained. In the case of the pregnant guinea-pig, if the embryos were removed the maternal tissues caused no alteration in a sensitive plate, whereas the embryos produced definite "curiegrams," as these pictures are called. These experiments have been repeated many times with constant results, though lack of clinical material prevented the authors from studying many verified human cancers. These remarkable observations, if confirmed, will unquestionably have far-reaching effects on the clinical detection and treatment of new growths. Not only will such curiegrams serve to permit the early diagnosis of neoplasms whose location renders them difficult of clinical study, but they will also permit the detection of metastases at a time when they are causing no symptoms and when radical treatment still offers hopes of successful removal.

Association News

THE ANNUAL SESSION

The Scientific Exhibit

The committee on Scientific Exhibit of the Board of Trustees has appointed, as members of the Advisory Committee, Scientific Exhibit, Drs. George Blumer, New Haven, Conn.; George Dock, Pasadena, Calif.; Evarts Graham, St. Louis; Ludvig Hektoen, Chicago, and Urban Maes, New Orleans.

The Committee on Scientific Exhibit also announces that the Scientific Exhibit for the Chicago Session, June 9-13, will be located on the Promenade floor of the Chicago Municipal Pier. The Registration Bureau, Commercial Exhibits and section halls will also be on the same floor, so that the activities will be centered at the Pier.

The committee is desirous that the exhibits shall be presented in a way that will emphasize their scientific value. This may be done by carefully worded explanatory placards, but particularly by personal demonstration. (The committee will require that all booths this year be in charge of a competent demonstrator.) Also it should be remembered that the general attractiveness of the exhibit is essential; the committee will do its part by having the booths decorated appropriately. A motion picture theater for lantern slides and motion pictures will be an adjunct of the Scientific Exhibit.

Any who desire an application blank for either the Exhibit or the Motion Picture Theater Program may obtain it by addressing a request to Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

The committee will make no assignments previous to April 4, in order that the amount of space available may be apportioned to the best advantage of all concerned. All applications must be received before this date.

Folliculosis in Children.—Folliculosis is an affection of early childhod, occurring somewhat more frequently in children with hypertrophied tonsils, developing no symptoms, running a very brief course as compared with trachoma, and disappearing spontaneously without sequela.—M. V. Veldee: *Pub. Health Rep.* **38**:2886 (Dec. 7) 1923.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Brinkley a "Goat Gland Specialist."—The secretary of the state eclectic examining board, following the revocation of "Dr." John R. Brinkley's license by the Connecticut special grand jury, announced that action will be taken to revoke the license issued him by the Arkansas eclectic board in 1915. Brinkley, it is reported, went from Arkansas to Milford, Kan., where he practiced as a "goat gland specialist." The Arkansas licenses of James A. Christian and James W. Cotner will also be revoked, it is stated. Both these men had their licenses revoked in Connecticut recently in connection with the "diploma mill" inquiry.

CALIFORNIA

Popular Medical Lectures.—The Stanford University Medical School announces a course of popular lectures to be given at Lane Hall on alternate Friday evenings, commencing January 4. The general subject is "The Internal Secretions," and the course will include the following lectures: January 4, "Active Principles Derived from the Glands of Internal Secretions," by Dr. P. J. Hanzlik; January 18, "Thyroid Disease," by Dr. Clement H. Arnold; February 1, "The Secretion of the Anterior Hypophysis," by Dr. Herbert M. Evans; February 15, "Hypophyseal Disturbances in Man," by Dr. E. B. Towne; February 29, "Insulin and Diabetes," by Dr. D. E. Shepardson, and March 14, "The Effect of the Sexual Cycle on Voluntary Activity in the White Rat," by Prof. J. R. Slonaker.

Hospital News.—The Oakdale Hospital, Oakdale, closed its doors, Nov. 8, 1923. The entire nursing staff of the institution will go to Merced to take charge of the new $60,000 hospital recently completed there.——The newest unit of the Jewish Consumptive Relief Association at Duarte was formally dedicated, Nov. 11, 1923. The new institution was constructed at a cost of $20,000.——The contract has been awarded for the nurses' home building, with roof garden and auditorium, to be erected for Mount Zion Hospital on Sutter Street, San Francisco, at a cost of $208,000.——Construction work started, Dec. 3, 1923, on the erection of the Roosevelt Hospital, Los Angeles. This institution will cost $400,000 and will have a capacity of 200 beds. The building will be four stories high and of Spanish-Italian construction. It will be located on Jefferson Street.——The Fabiola Hospital, San Francisco, dedicated its new maternity unit, Dec. 15, 1923. The building, located at Broadway and Moss Avenue, is fireproof, four stories high, and has a capacity of fifty beds. There are twenty-five private rooms.——The improvements which have been under way for several months at the Sonoma County Hospital are practically completed. The hospital has been almost completely renovated.

COLORADO

Society News.—A dinner was given in honor of Dr. George P. Lingenfelter and Dr. Thomas E. Carmody, Nov. 26, 1923, in Canon City, by members of the Fremont County Medical Society.——Drs. Samuel A. Joslyn, Loveland, and Thaddeus C. Brown, Fort Collins, were elected president and secretary, respectively, of the Larimer County Medical Society at Fort Collins, Dec. 5, 1923.——At the annual meeting of the Weld County Medical Society, Dec. 6, 1923, Dr. Daniel J. Horton was elected president and Dr. Nicholas A. Madler, secretary-treasurer.

CONNECTICUT

Producers of Certified Milk.—At a meeting in Hartford, recently, producers and distributors of milk from tuberculin tested cows, and who deliver their milk in its natural state—that is, not pasteurized—formed a permanent organization for the purpose of encouraging the use of natural milk from herds that are free from tuberculosis, and which have been so tested and certified by the state board of health.

Diploma Inquiry Continued.—One hundred physicians had been subpenaed to explain how they obtained their medical diplomas and licenses when the special grand jury reopened, January 2. Patients, relatives and friends of deceased patients

were called as witnesses, and the governor will testify again. Dr. S. J. Turcotte, Willimantic, was a witness, January 3, as a result of charges of Clayton Buck of Hebron, who told the grand jury that Turcotte five times lanced the throat of his son for diphtheria. The boy was ordered to the isolation hospital by another physician, who administered toxin-antitoxin. He recovered, although partially paralyzed. Other witnesses appeared against Turcotte, charging malpractice. Others called to explain how they obtained diplomas were Roy A. Long, Westport; Gerald A. Richardson, Bridgeport; Nelson Gourley, Windsor; Mrs. Irva M. George, New Haven, and the Rev. "Dr." George Coggswell, Hartford. Coggswell, a magnetic healer, who has a hospital, promised the grand jury to abandon his "healing" and to close his "hospital." Evidence showed that he was fined $200 in the district court, Holyoke, Mass., in December, 1922, for practicing medicine without a license. He intends, however, to continue as pastor of the First Church of the Divine Light, Inc. The grand jury adjourned, January 3, until January 7.

DELAWARE

State Laboratory Moved.—The state health and welfare commission at a meeting in Dover, Dec. 18, 1923, announced that the bacteriologic laboratory, of which Dr. Herbert J. Watson is director, will be moved from Wilmington to Newark and the venereal clinic from the City Building, Wilmington, to the Delaware Hospital.

DISTRICT OF COLUMBIA

Personal.—Col. James L. Bevans, U. S. Army, Washington, recently retired from the medical corps, has been appointed superintendent of the John D. Archbold Memorial Hospital, Thomasville, Ga. Colonel Bevans will take up his new post in October, when it is expected the hospital now under construction will be practically completed.

FLORIDA

Antimosquito Campaign.—At the first annual convention of the Florida Anti-Mosquito Association, in Bartow, Dec. 6, 1923 (THE JOURNAL, Dec. 22, 1923, p. 2020), the following officers were elected: president, George H. Clements, Bartow, to succeed Dr. Joseph Y. Porter, Key West, former state health officer, and secretary, George W. Simons, Jr., Jacksonville, chief sanitary engineer. The next annual convention will be held in Cocoa.

IDAHO

Personal.—Dr. O. F. Call, for four years mayor of Rigby, has resigned to locate in Pocatello.——Drs. J. R. Stevenson, and J. H. Einhouse, both of Moscow, were recently elected president and secretary-treasurer, respectively, of the North Idaho District Medical Society at the meeting in Lewiston.

ILLINOIS

Dr. East Resigns from Child Bureau.—Dr. Clarence W. East, director of the crippled children's clinic, bureau of child welfare of the state department of public health, Springfield, has resigned, effective, February 1. Dr. East has accepted the position of orthopedic director of the Illinois Crippled Children's Society, a new organization sponsored by the Rotary clubs of the state, with headquarters in Springfield. The clinics in various centers of the state will be taken over by the Illinois Crippled Children's Society.

Chicago

Public Lecture Series on Social Service.—Under the auspices of the American Association of Hospital Social Workers, a series of lectures in psychiatry, pediatrics and cardiac disease is to be given at weekly intervals, beginning January 7, by a number of Chicago physicians. The appeal of the lectures is particularly to those interested in social service and information of the public in matters of health. It is understood that the proceeds from this series of lectures are to be devoted to social service work.

Society News.—At a joint meeting of the Chicago Medical and the Chicago Pathological societies, January 16, Dr. Jacob C. Geiger, epidemiologist, U. S. Public Health Service, will give an illustrated lecture on "The Present Status of Food Poisoning in the United States."——A public lecture by Elmer V. McCollum, Ph.D., Johns Hopkins University, Baltimore, on the "Relation of Diet to Bone and Tooth Development and Tooth Preservation" was given at the University of Chicago, January 11, under the auspices of the local Chapter of Sigma Xi.

Medical Students Subscribe Aid to German Science.—Dr. William F. Peterson, secretary-treasurer of American Aid for German Medical Science, announces that the following subscriptions have thus far been received from students in various medical schools:

Other schools have collections in progress.

Cornell	$200.00
Hopkins	182.50
Wisconsin	116.10
Stanford	73.00*
Harvard	52.50†
South Dakota	29.00
Illinois	327.00
Western Reserve	16.50
New York Homeopathic	51.50
Bellevue	227.00
University of Nebraska	50.00

*San Francisco classes.
† Second year class reporting.

Chicago's Health in 1923.—The death rate during 1923, according to the city health department, was approximately 11.75 per thousand population, which is 1.93 per thousand deaths lower than the average annual death rate recorded during the previous ten years. The death rate from diphtheria was 1.34 per 10,000, the lowest mortality from this disease in the history of the city. The leading cause of death was heart disease, which caused 5,193 out of 33,940 deaths recorded for the year. Under the infectious diseases, pneumonia has far outstripped tuberculosis and is the leading cause of death in this class. An increased mortality from pneumonia resulted in an increase of 1,000 deaths from this disease in 1923 as compared with 1922. The infant mortality rate was 88.8 per thousand births. Only 68 cases of smallpox occurred during the year, the lowest number since 1916. Fewer cases of scarlet fever were reported this year than during any year since 1918. There were 15,190 cases of measles reported, an increase of 3,517 over 1922. The estimated approximate morbidity from typhoid fever in 1923 was 470 cases, as compared with 181 cases in 1922. A total of 18,000 cases of venereal disease was reported during the year. Twenty-five thousand children were immunized against diphtheria as compared with 8,395 in 1922, and more than 60,000 school children were vaccinated against smallpox.

INDIANA

Dr. Hill's Prison Sentence Confirmed.—The decision of the Marion County criminal court by which Dr. Albert A. Hill, Indianapolis, was sentenced to from two to twenty years in the state prison for an alleged illegal operation in 1921, was upheld by the supreme court of Indiana, Dec. 12, 1923, according to reports. Hill's license to practice medicine was revoked by the state examining board, July 13, 1921.

Mental Hygienists Elect.—At the eighth annual meeting of the Indiana Society for Mental Hygiene in Indianapolis, Dec. 17, 1923, T. F. Fitzgibbon, Muncie, was reelected president of the association, and Paul Kirby, secretary. Addresses were made by Dr. James W. Milligan, superintendent of the Southeastern Hospital for the Insane, Madison; Dr. Byron E. Biggs, superintendent of the Indiana School for Feebleminded Youth, Fort Wayne, Dr. Patrick H. Weeks, state prison, Michigan City, and Dr. Frankwood E. Williams, medical director of the National Society for Mental Hygiene, New York City.

IOWA

New Medical Society.—At a meeting of the county medical societies of Plymouth, Cherokee, Buena Vista and Ida at Storm Lake in December, 1923, the Northwest Central Medical Society was organized as an intercounty society, with Dr. Fisher Booth E. Miller, Cherokee, as president, and Dr. Martin J. Joynt, LeMars, secretary-treasurer.

LOUISIANA

Radio to Feature Hygeia Articles.—Under the auspices of the New Orleans Parish Medical Society, at the suggestion of the American Medical Association, health talks will be broadcasted from Tulane University Radio Station, New Orleans, every third Friday in the month. Articles from *Hygeia*, published by the American Medical Association, will be featured.

MARYLAND

Johns Hopkins Hospital Women's Clinic.—Exercises marking the formal opening of the women's clinic of the Johns Hopkins Hospital were held, January 9, in the medical amphitheater. Judge Henry D. Harlan, president of the board of

trustees, presided. Addresses were made by Dr. Walter W. Chipman, professor of obstetrics and gynecology, McGill University, Montreal, Canada; Dr. John G. Clark, professor of gynecology, University of Pennsylvania, and Dr. Winford H. Smith, director of the Johns Hopkins Hospital.

School of Hygiene and Public Health.—Ground will be broken within a week for the construction of the new building for the School of Hygiene and Public Health of Johns Hopkins University. The building, which will cost $1,000,000 when equipped, will be erected opposite the pathology building of the hospital. It will be an eight story building of modern Italian design in the form of an E. The basement, first and eighth floors will be of Indiana limestone, the intervening stories gray brick. It will be ready for occupancy in about a year.

Series of Clinics at the University of Maryland.—The division of medical extension of the University of Maryland has arranged a series of clinics for Thursday afternoons in the chemical amphitheater during January, February and March. The lectures are open to the medical profession. During January Dr. John M. T. Finney will give the first clinic on "Surgical Diagnosis"; Dr. Arnold Knapp of New York will lecture on "Causes of Iritis from a Medical Standpoint"; Dr. Thomas W. Salmon, New York, on "Psychiatric Problems of General Practice"; Dr. George W. Kosmak, New York, on "Toxemias of Pregnancy," and Dr. Edwin A. Locke, Boston, on "Disease of Bones," illustrated.

MASSACHUSETTS

Personal.—Dr. William R. MacAusland, Boston, spoke on "Arthroplastics of the Knee" before the section of orthopedic surgery of the New York Academy of Medicine, recently.—— Dr. Russell B. Sprague has resigned as director of the Cape Cod Health Bureau to become health director of the public schools at New Bedford.——Dr. Albert E. Small has been elected to the office of vice president of the Middlesex East Medical Society to fill the vacancy caused by the death of Dr. Ralph Putnam.——Dr. George H. Bigelow has been appointed director of the division of communicable diseases in the state department of public health. Dr. Bigelow was formerly director of the Cornell Pay Clinic, New York.

MICHIGAN

Personal.—Dr. William M. Tappen, Holland, has been appointed post commander of the Willard G. Leenhouts Post, American Legion.——Dr. G. G. Crozier, Ann Arbor, for twenty-four years a medical missionary in India, and an alumnus of the University of Michigan Medical School, has been home on furlough.——Dr. Louis A. King, Benton Harbor, has been appointed medical examiner of Berrien County in the Citizens' Military Training Camp recruiting organization for the Sixth Corps area.——Dr. Theodore L. Squier, Battle Creek, has been appointed medical director of the new Calhoun County Hospital, Marshall.——Dr. Daniel Todd, Adrian, celebrated his ninety-sixth birthday, Dec. 17, 1923.

MISSOURI

Semicentennial of Medical Society.—Greene County Medical Society celebrated its fiftieth year of existence with a banquet, Dec. 21, 1923, at the Sansone Hotel, Springfield, under the presidency of Dr. William A. Delzell. "Old Timers" who gave addresses were: Drs. Leander Cox, Edward L. Beal, William P. Patterson, George W. Barnes and James L. Ormsbee.

Antinarcotic Law Violations.—Charles V. Eckert, a druggist of St. Louis, was tried in the federal court on a charge of selling 200 quarter grain tablets of morphin to a drug addict; other addicts related to the court, it is said, that they had obtained large quantities of morphin and cocain at Eckert's drug store on prescriptions written by Dr. Thomas S. Manning, who has been convicted and sentenced to fifteen years in prison.

NEW YORK

New York Electrotherapeutic Society.—The executive committee of the New York Electrotherapeutic Society, at its recent monthly meeting, voted that members be notified that the committee considers it unethical for members of the society to give courses of instruction in electrotherapy or other branches of physiotherapy in massage schools or so-called "physiotherapy schools" controlled by laymen.

Amendment Proposed for Annual Registration.—At a conference between Governor Smith and heads of the state departments of health and education at Albany in December, 1923, which concerned the problem of ridding the state of quack doctors, it was decided to submit to the next session of the legislature an amendment to the medical practice act which would compel annual registration. Dr. Orrin S. Wightman, president of the state medical society, favored including the cost of administering the proposed amendment in the state budget so as to free physicians of a license fee. George A. Whiteside, counsel for the state medical society, said: "You might as well try to stop burglary by requiring all honest men to register annually."

New York Tuberculosis Association.—Lectures will be given before the various county medical societies on tuberculosis work under the auspices of the New York Tuberculosis Association. The first lectures have been arranged in cooperation with the Bronx County Medical Society and will be given before that organization, January 16, 23 and 30, on "Tuberculosis Infection," "Points on Diagnosis" and "Essentials of Treatment." Dr. Allen K. Krause, Johns Hopkins University, Baltimore, will give some of the lectures. Dr. Iago Galdston delivered the first of a series of lectures before the Manhattan Teachers' Training School on "The Teacher as a Health Officer," January 2, in connection with the tuberculosis association.

Proposed Legislative Investigation of Quacks.—Senator Love, a Brooklyn physician, January 2, introduced a resolution appropriating $30,000 for an investigation by a special legislative commission of quack doctors in New York state. Dr. Love, in his resolution, asserted that it was common report that medicine was being extensively practiced throughout the state by graduates of "low standard institutions." He asserted that the practice of such so-called physicians had become so great as to jeopardize the public health of the state. The resolution would empower a committee of three senators and five assemblymen to hold hearings in any city of the state, subpena witnesses and require the production of books of any of the alleged diploma mills.

Industrial Accidents.—At the suggestion of Governor Smith, a campaign has been organized and January 16 set aside as "Industrial Safety Day," when it is hoped to center the attention of the entire state on the necessity for reducing the economic waste and suffering due to accidents. Chambers of commerce, Rotary clubs, boards of trade, fraternal and civic organizations will feature industrial safety talks at their gatherings from the present time until the Industrial Safety Day. Arthur Williams, chairman of the committee of employers, labor leaders, educators and civic workers, which is cooperating with the state industrial commissioner in the accident prevention drive, states that employers in New York State are now paying out $17,000,000 a year in claims to injured workers; that 300,000 industrial accidents occur annually in this state, and 1,400 deaths. Investigation has shown that more than half of these accidents and deaths are preventable.

The Governor's Message.—In his annual message, Gov. Alfred F. Smith declared that the state should be more vigorous in prosecuting violations of the Medical Practice Act. He believes violators should be prosecuted by the attorney general, and is satisfied that violation of that law is a crime against the people of the whole state. Attention was called to a conference in the executive chamber between the representatives of medical societies, the state commissioner of health and the state commissioner of education, when facts were brought out showing the necessity for strengthening the statutes relating to the practice of medicine. Speaking with reference to the $50,000,000 bond issue to provide for the construction of modern buildings for housing and caring for the state's dependents, Governor Smith announced that a general plan would be submitted to the legislature, providing relief for the various institutions in the order of their needs.

New York City

Rockefeller Foundation Elections.—At its annual meeting, the Rockefeller Foundation elected to membership on its China Medical Board, Prof. Paul Monroe of Teachers' College, Columbia University, and to membership on its International Health Board, Dr. John G. Fitzgerald, University of Toronto, Canada.

Queens Doctors Hold Annual Dinner.—The Queens County Medical Society held its annual dinner at Forest Hills Inn on the evening of Dec. 19, 1923. Dr. Orrin S. Wightman, president of the Medical Society of the State of New York, delivered an address, in which he spoke of the war on quackery. He stated there was need for the immediate revision of the medical malpractice laws and "that there had

been no résumé and no inspection as to who had been a reputable physician in New York State in the last forty-three years, and that it was time we had a house cleaning."

Department of Health Reviews Housing Situation.—Two rather complete surveys of the housing situation in this city have been made by the department of health and extended reports of the results have formed part of the briefs filed in the U. S. Supreme Court in favor of the constitutionality of the rent laws when attacked. A part of the data collected in these surveys is published in the *Weekly Bulletin of the Department of Health*, Dec. 29, 1923, and forms the basis on which the health commissioner in a letter to the housing commission recommends that the existing emergency rent laws should be continued.

More Fake "Universities."—Last week an account of Lincoln "University" was given as one of four "colleges" recently investigated: the Cosmopolitan University, Inc., Lafayette University, Inc., and the Rockefeller Institute of Chiropractic. "Dr." Julius Spiegel, the organizer of at least five alleged "diploma mills," is held under $1,000 bail for the grand jury by Magistrate Dourse on a charge of grand larceny. This charge was made by Mrs. Katherine Rockefeller, one of the incorporators of the "Rockefeller Institute of Chiropractic," who, with her husband, David H. Rockefeller, conducts the Acme Stock Salt Company and the Guardian Food Company, 600 East One Hundred and Eighty-First Street, where the chiropractic institution was to be housed. Spiegel styles himself an "extension director" of the Cosmopolitan University, Inc., with offices in the Knickerbocker Building. A circular of the "university" offered courses in commercial science, pharmacy, chemistry, engineering, pedagogy, literature, philosophy and law for $50 each, or on the instalment plan at the rate of $10 a month. Evidence concerning the Cosmopolitan University, Inc., was submitted to the assistant district attorney in charge of the quack inquiry. The Rockefeller Institute of Chiropractic, officials state, was a deliberate attempt to use the name of the "oil king" and of his scientific institute for graft purposes. "Dr." William Lopatin voluntarily appeared at the office of Deputy Attorney General Dwyer to tell what he knew of the colleges said to have been organized by Spiegel. He said he received a "degree" of doctor of dentistry from Spiegel for $250. He met Spiegel in 1921, and was prompted to invest $4,000 to launch a correspondence school of chiropractic. The Lafayette College of Chiropractic was chartered in the state of Delaware and Lopatin made "head" of the institution at 552 Hinsdale Street, Brooklyn. When the investigation of the institution was begun, Lopatin's wife is alleged to have said that her husband was in Germany. Later, he decided to volunteer this information having disagreed with Spiegel in a financial transaction which did not turn out to his advantage.

OHIO

Counties to Standardize Sanitation.—At the fourth annual meeting of the Ohio health commissioners, recently held in Columbus, the standardization of sanitary regulations for all Ohio counties was definitely agreed on. Those regulations specifically set up rules governing water supply, plumbing, sewage vaults, garbage disposal and other regulations of direct concern to general good health conditions.

Wrong Label on Poison.—Suit for damages against a manufacturing drug company charging mislabeling of poison, which, administered by two Columbus physicians for another nonpoisonous drug, caused the death of two women and serious illness to a local physician, was reported contemplated by the husband of one of the victims, Dec. 22, 1923. The two women died within a week of each other last September, after having been treated with the drug, according to their attending physicians, Dr. Jonathan Forman and Dr. Elijah J. Gordon. The drug, according to the physicians, who are completely exonerated in the matter, had been purchased from a local wholesale drug dealer.

OREGON

Portland Academy of Medicine.—At the annual meeting of the academy, Dec. 13, 1923, Dr. William House was installed as president; Dr. J. Earl Else was chosen president-elect; Drs. Charles R. McClure and Charles M. Barbee, vice presidents, and Dr. Frank R. Menne, secretary.

Health Body Celebrates.—Every health organization in the state was represented at a banquet at the Hotel Portland, Portland, Dec. 14, 1923, in celebration of the twentieth anniversary of the birth of the state board of health. Governor Pierce and Mayor Baker were guests. Dr. John H. Rosenberg, president of the board, introduced Dr. Charles J. Smith, who acted as toastmaster. Dr. Walter T. Williamson, trustee of the American Medical Association, spoke of the work of that organization.

PENNSYLVANIA

Lycoming County Society Election.—At the annual meeting of the Lycoming County Medical Society, held recently, the following officers were elected for the ensuing year: president, Dr. Albert F. Hardt, Williamsport; vice presidents, Drs. Thomas Kenneth Wood, Muncy, and George A. Poust, Hughesville; secretary, Dr. Walter S. Brenholtz, and treasurer, Dr. John A. Campbell.

Philadelphia

Public Safety Director for Philadelphia.—Brig. Gen. Smedley D. Butler, U. S. M. C., has been appointed public safety director of Philadelphia for one year. He has been granted leave of absence, dating from January 1.

Hospital News.—Although $525,000 has been raised as a result of the twelve month campaign by the Methodist Episcopal Hospital, Philadelphia, the committee decided to extend the time in order to raise the additional $125,000 which the institution is seeking, to complete payment for expansion and improvements.

TENNESSEE

Child Welfare.—Dr. W. F. Walker recently arrived in Chattanooga to undertake a survey for the American Child Health Association regarding the promotion of child health and welfare. He will make a survey in three cities, Chattanooga, East Orange, N. J., and McKeesport, Pa. They were selected as being places of different types and all in the population class of between 40,000 and 70,000.

TEXAS

North Texas Medical Association.—At the eighty-sixth annual meeting of the association in Fort Worth, Dec. 12, 1923, Dr. George D. Lain, Sanger, was elected president; Dr. Leopold H. Reeves, vice president, and Dr. William S. Horn, Fort Worth, was reelected secretary-treasurer.

Campaign Against "Quacks."—At a meeting of the Dallas County Medical Society, Dec. 13, 1923, the members pledged themselves to contribute $2,500 or more to the state medical society's fund for a campaign which began January 1, the objective of which is to "create in the public mind the necessity for proper precautions for the preservation of health and the advisability of utilizing the knowledge of properly trained and accredited physicians in the treatment of disease." Dr. Franklin A. Pierce was elected president of the society to succeed Dr. Charles M. Rosser; Dr. William D. Jones, vice president, and Dr. William W. Fowler was elected to his sixth term as secretary-treasurer.

VIRGINIA

State Revokes "University's" Charter.—It is reported that the circuit court at Richmond, on evidence presented by the government, Dec. 25, 1923, revoked the charter of the Oriental University charging it with fraud in obtaining its charter and printing the names of prominent men not connected with the institution on its literature and stationery in soliciting business. This "university" operated from headquarters in Washington, D. C., although it was chartered in Virginia. Oriental University is one of the alleged diploma mills which peddled medical, dental and pharmaceutical certificates. During the trial, James C. Jones, a colored employee of the Treasury Department, testified that he had been engaged to give lessons in pharmacy to mail-order students. He stated that he wrote one lesson, signed two doctor of pharmacy diplomas and received a fee of $5 for his services as "professor of pharmacy."

WASHINGTON

Personal.—Dr. Thurman R. Laughbaum, Entiat, has been appointed medical officer for the Colville Indian Reservation, Nespelem.——Dr. Iva M. Miller, Yakima, has sailed again for China where she will spend another four years as a medical missionary.——Dr. Howard H. Smith has been reappointed city health officer of Yakima.——Dr. Winfred P. Dana, Tacoma, who has lately joined the U. S. Navy Medical Corps as an assistant surgeon, has been assigned to the Great Lakes Naval Training Station, Illinois.

WISCONSIN

Mental Hygiene Clinic.—Another mental hygiene clinic was formally opened, Dec. 10, 1923, at the county free medical dispensary, Milwaukee. Dr. Dorothy Ettenheim has been added to the staff.

University Expands Health Service.—Marquette University, Milwaukee, will establish a university health service for students, beginning in February. The program includes three main features: physical examination of all freshmen, establishment of a compulsory course in personal hygiene and inspection of sanitary conditions of all rooming, lodging and fraternity houses inhabited by students.

PHILIPPINE ISLANDS

Report of Bureau of Science.—In the twenty-first annual report (1922) of the Bureau of Science, just received, it is said that the earned income of the bureau for the year ($343,651.33) was the largest it has ever earned, and that the total expenditures decreased $163,424.22. The bureau is maintained wholly at the expense of the Philippine government, and the director feels it could be placed on a practically self-supporting basis if given adequate financial support at this time for development. The policy that has been followed for several years of abolishing positions which happen to be vacant at the close of the year, of reducing all salaries to that of the incumbent, and of providing no promotions and no new positions, will be disastrous eventually. The primary object in establishing the bureau was to assemble in one unit the scientific activities of the Philippine government for economy and efficiency of administration. It is now reduced to a considerable degree to the services of but a single technical man in each of several departments. The U. S. Army Medical Research Board occupied by agreement two laboratories in the main building of the bureau and undertook investigations of beriberi, tuberculosis and leprosy. There were nine "pensionado" students doing advanced work in the United States on behalf of the bureau. There was a decrease of 432,357 units of vaccine virus disposed of by the bureau over the previous year. There were 48,772 bottles of "tikitiki" extract prepared and delivered to the director of health for the treatment of beriberi, an increase of 30,585 bottles over 1921.

GENERAL

The Volstead Act.—Senator Edge is sponsor of a bill which he introduced, Dec. 19, 1923, to amend the Volstead act which would restore to physicians the right to prescribe alcohol in the practice of their profession as they see fit. Two federal judges have already declared that section of the act unconstitutional which circumscribes the judgment of the physician in practicing his profession.

National Safety Council Contest.—An industrial safety film contest is being conducted by the National Safety Council, in which a prize of $300 is offered for the best scenario received. The contest, which will close January 31, is open to both members and nonmembers of the council. Preference will be given to scenarios which tell a connected story dealing with the fundamentals of safety.

Opium Conference.—The Council of the League of Nations in Geneva, Dec. 13, 1923, decided to convoke two international opium conferences at Geneva in November. A committee was appointed to arrange the conferences composed of an American, two European representatives and three technical experts. The first conference will be restricted to those countries having possessions where opium smoking continues.

Veterinary Conference.—The sixteenth annual conference for veterinarians will be held, January 10-11, at the veterinary college, Cornell University, Ithaca, N. Y. Dr. Livingston Farrand, president of the university, will deliver the address of welcome. Surgical and medical clinics will be held, and among other speakers, Prof. Septimius Sisson, professor of anatomy, Ohio State University, Columbus, will speak on "The Anatomy of the Digestive Tract."

Government to Look for Quacks.—The federal government, Dec. 15, 1923, moved to weed out "diploma mill" graduates who have succeeded in getting into the public service. A force of inspectors under the instruction of Postmaster General New have started to comb all government departments for persons holding degrees from fake universities. The investigation will be nation-wide, and officials of the U. S. Public Health Service, the Surgeon Generals of the army and navy, and health commissioners of the leading cities of the country will be among the first witnesses called.

American Hospital in Jerusalem. — According to an announcement by Dr. Nathan Ratnoff, president of the American Jewish Physicians' Committee, a modern medical college and hospital will be erected at a cost of $1,000,000, on the Mount of Olives in Jerusalem on an 8 acre site purchased by American physicians and philanthropists. The university, it is stated, will become part of the general scheme of Palestine development undertaken by the American Keren Hayesod. The chemical and biologic laboratory buildings, already under construction, will be opened about June 1.

Welfare of the American Indian.—At a meeting in Washington, D. C., Dec. 13, 1923, of the committee of 100 appointed by the Secretary of the Interior to advise with him concerning the interests of the American Indian, resolutions and recommendations on their education, health and sanitation, dances and ceremonies, and nonadmission to the court of claims were submitted. Congress will be urged to appropriate $100,000 to combat tuberculosis, pyorrhea and trachoma among Indians. The National Health Council will be asked to proceed with its projected survey of the Indians' health, and to undertake a study of the effects of peyote.

American Association for the Advancement of Science.—At the Cincinnati meeting, Dec. 27, 1923-January 2, Dr. J. McKeen Kattell, New York, editor of *Science*, was elected president of the association for the ensuing year. Dr. J. J. R. MacLeod of the University of Toronto, Canada, gave an address. Constituent bodies of the federation meeting at the same time were the American Society for Experimental Biology, the American Physiological Society, the American Society for Experimental Therapeutics and the American Society of Biological Chemists. The next annual meeting will be held in Washington, D. C. Nearly 3,000 scientists attended the sessions.

Cancer Research Prize Awarded.—Dr. Johannes Fibiger, professor ordinarius in pathologic anatomy at the University of Copenhagen, has been awarded the first Sofie A. Nordhoff-Jung Cancer Research Prize. The citation says in part Dr. Fibiger "has demonstrated, following repeated experimentation, that parasites play an important rôle in the formation of certain types of tumors in the proventriculi of rats. . . . Where others have failed after years of persistent researches, he first met with success in artificially inducing malignant tumors through external irritations and so throws wide new avenues to future findings." The commission on award consisted of Professors Borst, Doederlein, von Romberg and Sauerbruch, all of the University of Munich.

Dr. Emerson Finds Germans Underfed.—Dr. Haven Emerson, New York, who sailed for Germany, Dec. 22, 1923, to study health conditions under the auspices of the American Friends Service Commission, has cabled after four days' study of Berlin hospitals, orphanages, baby stations, school children and homes of the unemployed that he finds the milk supply of Berlin is one-tenth the prewar consumption and that undernourishment is widespread, increasing and genuine. The shortage of food, coal, light and houses combined with diminished medical and hospital facilities is causing an increase in disease. The chief food needs of children are milk, butter-fat and cod liver oil. Dr. Emerson's report and that of Prof. Ernest M. Patterson on the economic condition in Germany will guide the American Quakers in their child-feeding work this winter.

American Red Cross.—The annual meeting of the American Red Cross was held at National Headquarters, Washington, D. C., Dec. 12, 1923. At the session of the board of incorporators, held under the presidency of Chief Justice William H. Taft, Senator Arthur Capper, Archbishop Michael J. Curley, Bishop James B. Freeman, Samuel Gompers, Bishop William F. McCowell and Senator F. M. Simmons were elected to membership on the board. Acting Chairman Fieser reported that more than $11,400,000 had been collected for the American Red Cross Japanese Earthquake Relief.——The French embassy, in a letter to national headquarters, Washington, states that American Red Cross personnel who saw service in the World War for certain periods are entitled to the French Victory Medal. Service must have been as follows: all members who were recipients of the Croix de Guerre or were wounded, regardless of duration of service; members who were attached to fighting units for not less than three months and members who were attached to hospital or ambulance units in the army zone for not less than eighteen months.

Traffic in Women and Children.—In a report, as unofficial representative of the United States on the advisory committee of the League of Nations, on the traffic in women and chil-

dren, Miss Grace Abbott, chief of the Children's Bureau, U. S. Department of Labor, states that the council of the League of Nations has appointed a commission of experts to investigate the international traffic in women and children, and has appointed Abraham Flexner of New York chairman. Seventy-five thousand dollars has been appropriated by the American Social Hygiene Bureau toward the cost of the investigation. Resolutions adopted by the advisory committee and approved by the council of the league, with few changes, suggested that the secretariat of the league prepare a digest of the laws on the traffic in women and children in the various nations; that the council draw the attention of all governments to the desirability of ratifying the convention of 1921 (with regard to the prosecution of persons engaged in the traffic and to measures connected with immigration for the purpose of checking such traffic); that the council obtain information on matters relating to the emigration of women and children; and recommended that women as well as men be employed among the police in dealing with prostitution.

LATIN AMERICA

Pan-American Red Cross Conference.—The first Pan-American Red Cross Conference was held in Buenos Aires, Nov. 25-Dec. 6, 1923, under the auspices of the League of Red Cross Societies. It was voted that the second Pan-American Conference should be held in Washington, D. C. More than 100 delegates attended from every country of North, South and Central America with the single exception of Canada.

Peruvian Medical Association.—The headquarters of this newly organized national Círculo Médico Peruano have been arranged in the Academia de Medicina and Observatorio Unánue and the official inauguration was a brilliant occasion. The dean of the medical faculty, Dr. Gastañeta, was elected honorary president; Dr. Pablo Mimbela, active president; Dr. Miguel Aljovín, first vice president; Drs. F. Graña and R. Palma, secretaries; J. Voto Bernales, recording secretary; Hercelles, treasurer: R. Ribeiro, librarian, and H. Valdizán, director of the *Revista*. Other directors elected were Drs. Julian Arce, C. Carvallo, C. Monje, R. Eyzaguirre, F. Merkel and R. Neuhaus. The president of the republic addressed the meeting, and a letter was read from the medical members of the chamber of deputies asking to be enrolled as members of the new organization, and pledging their aid in congress to promote the aims and interests of the organized profession, and to present to congress matters suggested by the organization, and to suggest to the organization matters and reforms which the "Medical Parliamentary Group" thinks should be studied. This communication was signed by the seven physicians forming the medical group.

FOREIGN

Physician Leaves Fortune to Nurses.—Dr. Thomas H. Kelly, Norwich, England, left his entire estate of $300,000 to nurses who assisted him during the last thirty years.

Lister Ward to Go.—By a vote of sixteen to seven the board of managers of the Royal Infirmary of Glasgow recently voted to demolish the Lister Ward. This portion of the old infirmary buildings will be entirely rebuilt for the new outpatient department despite protests from many sources against demolishing a building with such historical associations.

Memorials to Physicians.—A fund for the encouragement of scientific research will be administered as a memorial to the late Prof. Augustus D. Waller and Mrs. Waller of London, for their work in physiologic investigation. The London School of Medicine for Women will have charge of the fund. It is proposed to establish the Waller Research Laboratory at St. Mary's Hospital Medical School, London.——A bronze tablet in memory of the late Dr. Charles Wray has been erected by his patients, at the Croydon General Hospital, England, where for thirty-five years he served as ophthalmic surgeon.

Honorary Degree for d'Herelle.—The University of Leyden has voted to confer an honorary degree on F. H. d'Herelle for his research on bacteriophagy. The *Nederlandsch Tijdschrift* relates that he was born in 1873 at Montreal, and after graduation at Paris became bacteriologist in the government service in Guatemala, Yucatan, and later in Argentina, Turkey and Tunis. During the World War he was in the vaccine department of the Pasteur Institute at Paris, and later went to Cochin China, to combat plague in the buffalo. Since then he has been working with Flu at the Tropical Hygiene Institute at Leyden.

University News from China.—Ninety-four medical and ninety-seven premedical students are now studying at Shantung Christian University School of Medicine, Tsinanfu, China. Following the transfer of the Women's Medical School from Peking, for the first time in its history, women students have been admitted to the medical school at Tsinanfu. The China Medical Board has donated $50,000 toward new buildings and equipment which will be located at the northwestern end of the campus, contingent on the women's board raising a total of $115,000. The sum of $101,804 has already been given by the Presbyterian, Methodist and Christian college boards. Among the American women physicians who have been transferred from Peking to Tsinanfu are: Drs. Annie V. Scott, Frances J. Health, S. Waddell, Luella Miner and Julia Morgan.

Japanese Medical News.—The Peking Union Medical College of the Rockefeller Foundation in China has offered to extend its facilities to the Tokyo Imperial University following the destruction by earthquake and fire of the latter institution in September, 1923. Eight research workers have taken advantage of the exchange professorships for six months, among them being Drs. Nukada and Nishibe, of the Government Institute for Infectious Diseases, and Dr. Haruo Hayashi, professor of pharmacology in Tokyo University.—— Professor Kozai, president of the Tokyo Imperial University, announces that the Marquis Tokugawa has donated the entire Nanki library as well as the library building to the university in order to replace part of the loss to the university caused by the destruction of its library during the earthquake. The Nanki library consists of more than 100,000 volumes.

International Cancer Research.—A scheme for concerted study of mammary and uterine cancer has been undertaken by a small band of workers in England, Italy and the Netherlands. In the latter country, Jitta, chief of the national public health service, and Deelman, director of the Leeuwenhoek Institute for cancer research, are in charge. The records are to comprise not only an unprecedented number of details, but each cancer case is to be accompanied by an identical record of another woman of the same class and condition, but free from cancer. They are hoping that recently graduated women physicians will be willing to give their aid in the research, which cannot fail to clear up a number of questions, such as, why is the mortality from mammary cancer twice as high in England as in the Netherlands. Full details of the questionnaires, etc., are given in the *Nederlandsch Tijdschrift* **2**:2216, 1923.

Society News.—The second International Congress of Urology will be held in Rome, April 23-26, under the presidency of Professor Alessandri. Vaccine treatment in urinary diseases; renal innervation, recent progress in urology; pathogenesis of hydronephrosis and vesical malacoplakia will be some of the subjects discussed by such authorities as Wulff of Copenhagen; Brongersma of Amsterdam; Hinman of San Francisco; Sir John Thomson-Walker of London, and Noguès of Paris.——The next meeting of the Central Rhineland Surgical Association will be held at Frankfort-on-the-Main, January 12.——The next congress of the Royal Sanitary Institute will be held at Liverpool, England, July 14-19.—— The Prince of Wales was the principal guest at the annual dinner of the Royal Society of Medicine in London, Dec. 11, 1923. Sir William Hale-White presided. The society now has 4,000 fellows and members and during 1923 held 100 meetings. Two thousand books have been added to its library, making 120,000 in all.

Prizes Awarded by the French Academy of Medicine.—The Académie de médecine at Paris offered forty-three prizes in 1923, and there were ninety-eight competitors. The value of the thirty-six prizes conferred totaled 74,000 francs. Among the recipients were DeSomer, Ghent; L. Reutter, Geneva; Prof. J. N. Roy, Montreal (for his study of "Goundou"), and H. Renaud, Morocco (for his "Plague in Morocco"). The Audiffred prize, representing an annual income of 24,000 francs, to be awarded to the discoverer of a sovereign remedy for tuberculosis, was not awarded, nor the Roussilhe triennial prize of 10,000 francs for distinguished work in the relief or cure of skin diseases, especially psoriasis. These two prizes are open to the world, but only one competing article was received for each. After this year, the Prince of Monaco biennial prize of 100,000 francs will be available. This is to be given for the best work or group of works in some branch of the medical sciences. No personal candidacy is admitted for this prize. The Huchard prize for "medical devotion" was divided between the heirs of the intern Perrochaud, who died of scarlet fever, the superintendent of a

training school for disabled veterans, and the heirs of an army medical officer who succumbed to typhus at Mascara. The Académie awarded numerous medals, further, for special efforts in the vaccination service, child welfare work and spa propaganda, maintaining a special service with annual reports for each.

Deaths in Other Countries

Dr. **Manuel A. Velásquez,** professor of biologic chemistry at the University of Lima.——Dr. **Sydney H. Stephenson,** London, England, editor of the *Ophthalmoscope* and the *British Journal of Ophthalmology,* Dec. 15, 1923.——Dr. **R. Tigerstedt,** professor of physiology at the University of Helsingfors; formerly at Stockholm, aged 70.——Dr. **A. de Giacomo,** professor of traumatology at the University of Naples, aged 70.——Dr. **L. Stumpf,** formerly chief of the vaccine service of Bavaria.——Dr. **George W. Pollack,** surgeon to the Children's Hospital, Liverpool, England, suddenly of cerebral hemorrhage while watching a football game.

CORRECTION

Line Missing.—In the Rhode Island news (THE JOURNAL, January 5, p. 41) the third line was missing. The item should have read: According to Dr. Byron U. Richards, Providence, secretary of the Rhode Island State Board of Health, Dr. Fred H. Works, U. S. Public Health Service, Boston and Stonington, Conn., whose license was one of the first eighteen revoked by the Connecticut special grand jury, tried repeatedly to secure a license to practice in Rhode Island. Each application was refused, it is stated, because of insufficient credentials.

Government Services

Influx of Patients in Marine Hospitals

Surg.-Gen. Hugh S. Cumming announced, Dec. 10, 1923, that owing to the increased amount of shipping on the Pacific Coast, the marine hospitals of San Francisco and Port Townsend operated by the U. S. Public Health Service are now overcrowded. It has been necessary, it is reported, to place a number of patients in contract hospitals.

Chief of Surgical Service Appointed

Dr. Joseph H. Ward, Indianapolis, has been appointed chief of the surgical service of the Tuskegee Veterans' Hospital, Tuskegee, Ala. Dr. Ward's appointment is a part of the program of the U. S. Veterans' Bureau to place negro physicians on the staff of the Tuskegee Hospital, all patients of which are negro ex-service men.

Naval Medical School Class

Thirteen medical officers of the Navy graduated from the Naval Medical School, Dec. 22, 1923. Beginning January 18, a new class of officers will be ordered to the school for a course of instruction. Recently the Navy Medical Department received about forty applications from senior medical students who will graduate from Class A medical schools in 1924, for examination for appointments.

Hospital Authorized

Pursuant to instructions of the Secretary of War the organization of Evacuation Hospital, organized reserves, No. 29 (Memorial Hospital Unit, Roxborough, Pa.), has been authorized.

Army Medical Mission Returns from Japan

The army medical mission consisting of ten medical officers, six nurses and forty-one enlisted men, which arrived in Yokohama, Japan, Sept. 26, 1923, with approximately $5,000,000 worth of medical supplies for survivors of the earthquake, returned to the Letterman General Hospital, San Francisco, December 14, with the exception of Major Claude W. Cummings who has remained in Yokohama on duty as attending surgeon. This mission joined the Philippine mission, which had already erected a 600 bed hospital under canvas. This hospital was turned over to the Japanese and the two missions proceeded to Tokyo, October 6, to establish a 1,000 bed hospital, known as the Bei-Hi (American-Philippine) Hospital. This was turned over to the Japanese, October 14, when the missions left for Manila. The following officers were with the San Francisco mission; Majors Charles E. McBrayer, Robert D. Harden, Charles K. Berle, Edmund W. Bayley, Sam F. Parker, and Capts. Frank W. Pinger, William A. Boyle, Charles W. Henderson and Elmer S. Tenney.

Foreign Letters

PARIS

(From Our Regular Correspondent)

Dec. 14, 1923.

Death of Dr. Georges Linossier

The death of Dr. Georges Linossier, formerly agrégé professor of chemistry in the University of Lyons, consulting physician at Vichy, is announced from Paris. Linossier had instructed at Lyons in analytic and biologic chemistry, toxicology and hydrology. On completing his duties as agrégé, he took up his abode in Vichy, but for eight years still remained connected with the medical clinic of Professor Bondet, in which he gave, during the winter semester, a free course in applied clinical chemistry. Later, he left Lyons for Paris, and returned there every autumn after the season at Vichy closed. After the war, he collaborated with Professor Carnot of the University of Paris medical school, where he gave supplementary instruction in hydrology, crenotherapy and climatotherapy. His reputation as an hydrologist and his value as a teacher had led to the consideration of creating for him a chair of hydrology. Linossier published a series of interesting articles on diseases of the stomach and liver, glycosuria and albuminuria, alimentation and special diets. At the congress of medicine of 1907 he presented a paper on the treatment of gastric ulcer. He had been a corresponding member of the Acamedy of Medicine since 1893, and in 1917 was elected vice president of the Société de biologie. He was a member of the editorial staff of the *Paris médical.*

Prohibition in the United States

In several previous letters, I have referred to the campaign of disparagement that our political journals continue to wage against American prohibition (THE JOURNAL, July 24, 1920, p. 255; April 2, 1921, p. 947 and Feb. 17, 1923, p. 490). In the current number of the *Annales médico-psychologiques,* Dr. Maurice Legrain, well known for the active part he has always taken in the prohibition movement, has published an interesting article on insanity due to alcoholism, in the United States. He begins with a vigorous protest against this campaign of the press. He remarks that the perseverance which the press shows in its plan of belittling American prohibition appears significant. The journals take supreme delight in collecting, if they do not actually invent, the most grotesque accounts of the purported effects of prohibition in America. If the press were to be believed, public and private life in America, since the introduction of prohibition, must be in a deplorable state; never have there been so many criminals, so many drunkards, so many insane persons and so many vagabonds. Never have affairs been at such a low level. The ideal thing would be (one is forced to conclude) for a nation that has any self-respect to drink large quantities of alcoholic beverages, since the dry régime brings so many disasters. What the journals endeavor to show is, that, if it is true that alcohol has disappeared, it has been replaced by drugs and narcotics which are much worse. Even admitting, for the

sake of argument, Legrain continues, that this is true, would America have cause to regret, on that account, the suppression of one of the greatest social evils? And if some persons are so foolish as to seek substitutes for alcohol, need we be unduly moved by the fact? Such persons are actually ill, and, after all, they constitute a small number as compared with the many who have profited by the great reform movement. The apparent aggravation of conditions caused by their excesses cannot prevail against the vigorous stand taken by the large majority of citizens who desired and brought about prohibition and who are, essentially, the true guaranty for its enforcement.

Legrain recalls that prohibition is not the result of an impulsive decision formed over night. The prohibition movement in the New World is, in reality, almost a century old. Prohibition is the result of a slow but progressive molding of public opinion, and, before it became the law of the land, it had been voted on and adopted by several states. The war gave only the final impetus to a reform which had long been earnestly desired by the majority of serious-minded people—a reform that would have been accomplished within a few years if there had been no war.

One of the best proofs of the good effects of prohibition lies in the fact that the number of persons becoming insane from alcoholism has quite generally diminished. Legrain gives numerous statistics which show a decline of insanity due to alcohol. This decrease of psychoses of alcoholic origin is due in part to restrictive measures and in part to changing customs.

Legrain ends his article with some suggestive reflections on the present state of prohibition enforcement in the United States. He recalls with what blind violence most of the governments of wine-producing countries, at the absolute mercy of the "eternal wailings" of the viniculturists, have carried on their attack against prohibition, seemingly totally oblivious to the fact that they thereby compromise their good relations with the United States. It is a matter of common knowledge that, since the introduction of prohibition, a formidable system of smuggling has been organized, in which there is evidence that various governments have connived. Taking advantage of the incurable thirst of the inveterate drinkers of the New World, smugglers have continued to supply them with liquor, and, as usually happens, the reaction in some respects has exceeded the action; public opinion has been blinded, for the time being, to the real effects of prohibition, and it may seem, paradoxically, that the suppression of alcoholism has caused development of other vices.

But, Legrain concludes, nothing can prevail against the facts that are the result of the general evolution of ideas throughout the country; against the common experience of the people; against the slow but profound transformation of character, extending over a long period of years, which has resulted in the development of a new nature; against the subconscious evolution of a whole people through education and training. . . . It would constitute an injustice and a blindness to open fact to deny the splendid moral training through which several generations of noble American women have molded the minds of the youth of the land and have awakened in them a profound hatred of alcohol, which ruins the body and degrades the soul.

International Intellectual Cooperation

The international commission on intellectual cooperation, created by the League of Nations, has just held its third session in Paris under the chairmanship of Professor Bergson. In concert with the delegates of the national committees on intellectual cooperation, it investigated the question of exchange of professors and students. It was decided that the trimonthly bulletin published by the International Bureau of Information on Universities, established by the league, could serve as a clearing house for offers and requests for information. Furthermore, it was suggested that the national committees might endeavor, in their respective countries, to facilitate by all means possible the exchange of students and, more especially, of professors. Professors should be engaged not merely for a series of lectures but also for courses or practical drills of longer duration. The delegates of countries that engaged in the war and also of the newly created states were especially emphatic in stressing the importance of the exchange of professors, not so much of lecturers dealing with general questions as of technicians and specialists.

The commission considered a proposal of M. Destrée, former minister of arts and sciences in Belgium, on the means of assuring writers better protection for their literary productions. M. Destrée was requested to prepare a detailed plan similar to that elaborated by M. Ruffini for the protection of scientific production, which has already been submitted to the various governments for their approval. While awaiting the elaboration of the project of M. Destrée, the commission (thus endorsing the resolution of the Genoa Conference) decided to request the League of Nations to urge the countries that have not already done so to adopt the international agreements of Bern relative to the rights of authors.

The commission inquired also into the best means of facilitating the restoration of the scientific collections destroyed by the earthquake in Japan. The question had been raised by Professor Nitobe, general undersecretary of the League of Nations and the Japanese representative on the commission on intellectual cooperation, and the commission decided to bring all efforts to bear to effect a restoration of the foreign collections of the library of the Imperial University of Tokyo. The fire that followed the earthquake destroyed 470,000 volumes of that library. A universal appeal is to be launched, requesting the universities, learned societies and individuals throughout the world to send books to the Imperial Library of Tokyo through the mediation of the Japanese embassies in the various countries.

At the previous meeting of the commission, M. Colville, director of higher education in France, presented his ideas on the question of the reorganization of the libraries of Paris, which was decided on by the French government as the result of a resolution adopted by the International Commission on Intellectual Cooperation. The commission, with a view to facilitating the work of investigators and scientists, had recommended the establishment in large intellectual centers of completely equipped libraries, easily accessible, secured mainly through the administrative coordination of existing libraries, the creation of a common catalog and the establishment of services where bibliographic information may be readily obtained. The project elaborated in this direction by the French government plans to make the great wealth of books now scattered through the libraries of Paris more accessible to all, and will mark a distinct advance from the international point of view.

A Lecture by Professor Bosch Arana

Professor Bosch Arana of Buenos Aires, who is spending a short time in Paris, recently gave at the Faculté de médecine, with the aid of motion pictures, a lecture on cineplastic amputations. The text of this lecture is published in the current number of the *Presse médicale*.

Hospital Fees in Paris

In conformity with the conclusions reached by M. H. Rousselle in his report, the municipal council of Paris has decided to make the per diem charge for hospitalization in the hospitals of Paris, for the year 1924, 20 francs in the department of internal medicine and 22 francs in the departments of surgery and obstetrics.

BUENOS AIRES

(From Our Regular Correspondent)

Nov. 25, 1923.

Child Welfare

The government has organized a division of child welfare in the national health department. Its functions will be to study infant morbidity and mortality, maternal welfare, school hygiene, child labor and allied subjects. An effort will also be made to coordinate all agencies now working along the same lines. The division at first will be directed by a board consisting of the president of the national board of health, the director of the Buenos Aires public assistance, the president of the charities' society, the president of the child welfare association, the chief of the school medical inspection service and the heads of other child welfare agencies.

Insulin

On completion of a year's experimental and clinical studies, the insulin commission appointed by the national health department has presented a report advising full supervision over all preparations, whether manufactured at home or imported.

Municipal Health Work

In addition to hospitals and special institutes (THE JOURNAL, Dec. 29, 1923, p. 2199), Buenos Aires maintains a health office proper, and departments of disinfection, food supervision, veterinary inspection and chemical laboratories. The disinfection department has 373 employees, four stations and thirty-one ambulances. During the year, 54,843 premises and 3,333,391 vehicles were disinfected. The veterinary service inspected in the slaughterhouses 1,976,597 animals, and in the markets, 9,238,618 head of poultry, 18,608,794 kg. (40,988,533 pounds) of fish, and 62,837,825 quarts of milk.

Smallpox

During the year 1922, there were 971 deaths from smallpox in the whole country. Outbreaks occurred at Salta (imported from Bolivia), Puna, Santiago del Estero, Chaco and Formosa. Vaccination was enforced more rigidly, and 926,165 persons were inoculated during the year, the result being that the disease was completely eradicated from Buenos Aires. At present, the outbreaks may be considered to have come to an end, although sporadic cases are still reported from Cordoba. Vaccination certificates are no longer required from persons arriving from Uruguay. This requirement had been causing much inconvenience to passengers arriving on ships.

Tuberculosis Dispensary

The mutual aid society of postoffice and telegraph employees has opened a tuberculosis dispensary in this city and is taking steps to build a hospital for tuberculosis patients in one of the suburbs.

Red Cross Congress

The foreign delegates to the international congress of the Red Cross, to be held in this city, are already arriving. A number of countries, both American and European, will be represented.

Malaria

Since he became the head of the national health department, Dr. G. Araoz Alfaro has been pushing the campaign against malaria. His first act was to order all the malaria personnel to be actually on duty at their different field stations. This brought about immediately a number of resignations and changes in the force. The employees under the irrigation division of the public works department have received instructions to assist in the drainage and filling work to be done at Salta, Jujuy, Catamarca, Tucuman and other malaria-ridden places. A vast amount of antimalaria work is already being carried out.

VIENNA

(From Our Regular Correspondent)

Dec. 12, 1923.

Marriages, Births and Deaths in Austria

The statistical bureau of this republic has recently published a short report dealing with the fluctuations of the population since 1914. The average number of marriages in the years 1911-1913, calculated for the present Austrian Republic, was 47,887. It dropped within the next three years to 27,878 in 1916; then it gradually increased to 40,892 in 1918. After that year, it went up by leaps and bounds. In 1919, it reached 75,822; in 1920, it was at the maximum, 82,596, and in 1921 it stood at 78,126. In 1911, the number of marriages was 7.2 per thousand inhabitants; in 1916, it was 4.4; the next year, 4.8; then, 6.62. In 1919 it was 12.3; in 1920 it reached 13.5, and in 1921, 12.7. A similar curve is shown by the numbers of births, although the recuperation is not so marked. From 1914 till 1921 inclusive, the corrected figures are: 157,159, 122,970, 97,155, 90,232 (minimum, in the year 1917), 90,948, 114,299, 141,760 and 146,731. In relation to population these figures mean, per thousand: 24.11, 19.07, 15.23, 14.30 (minimum), 14.57, 18.52, 23.12 and 23.85. In spite of the recuperation, the figures of 1914 were not reached in 1921. A reverse diagram is that pertaining to the number of deaths, excluding deaths at the fighting front and in the back lines, but including prisoners of war and fugitives. For the same years the number of deaths was: 118,178, 137,370, 133,343, 144,367, 169,736, 125,449, 116,693 and 104,599; or, per thousand living: 18.13, 21.30, 20.90, 22.88, 26.40, 19.03 and 17.06. The relatively high figure for 1919 is due to the rather high mortality of wounded or diseased prisoners of war and fugitives dying within the last half of that year in the countries that now form the Austrian Republic.

Austrian Views of American Medical Conditions

Professor Wenckebach and Professor Pirquet, both of whom enjoy an international reputation, have recently delivered lectures on observations made during a visit to the United States, where they lectured on special subjects. Professor Wenckebach had studied the organization of medical education, which impressed him as being on a high level. He was also impressed with the importance attached in modern America to physical culture. He examined with special interest the relations between professors and students and was struck with the friendly relations that obtain. The problem of the full-time professor has been much discussed in Vienna, and we have been unable to satisfy ourselves that this would be the best solution of the teaching problem. Professor Wenckebach thinks that it is important for the teacher to remain in touch with private patients, and not to restrict himself to scientific hospital work. He pointed out that this system has been of the utmost value in promoting a high standard of medicine in the United States, and that the disappearance of about ninety-six minor "medical schools" has improved and helped to maintain the high level of instruction. The absence of titles is well worth imitating; it is not the post a man fills that makes his reputation, but his actual knowledge and abilities. Dr. Wenckebach was much impressed by the operations on the heart, which he witnessed in St. Louis and in Boston, and also with the high quality of papers presented to the various medical societies. The vast sums of money obtainable from the public for the maintenance of hospitals and universities made him envy the American university teacher.

Similar remarks were made by Professor Pirquet in a paper on his American tour. He, too, was struck by the excellent standard of the younger American physicians now graduating from first-class medical schools. He attributes the improvement solely to the energetic action taken by the

American Medical Association in the last fifteen years to reform the system of medical teaching. The method of publishing the results of the final examinations and naming the schools from which the successful and unsuccessful candidates came is most effective in showing the public where good teaching is obtainable, and thus the second-class schools are disappearing. Pirquet spoke appreciatively of the general practitioner and incidentally of the fees obtained, as compared with the earnings of an Austrian physician.

The New Medical Practice Act

The federal government has laid on the table of the national assembly a bill dealing with the regulation of medical practice and with all problems connected with it. The bill contains eighty-three sections, in which only some of the demands of the profession have been incorporated. The rules pertaining to the practice of medicine, the official representation of the profession, the rights and duties of the doctor of medicine, the disciplinary jurisdiction, and penalties for infringement of the professional laws are the titles of the chief chapters of the bill. While the majority of physicians advocated a compulsory "hospital year" after graduation—a special commission studied this question a year and a half ago—the new bill does not contain this demand. It leaves, however, the possibility open to a future ordinance by stating that the ministry of education may, if necessary, require a term of practical service in a hospital before granting permission to practice privately.

Elections for the Medical Council, which will be the official representative of the profession, will take place every four years; a system of proportional voting is provided to insure a true representation of all groups in the profession, regardless of political affiliations. The council will be a strictly professional corporation. It will decide all problems pertaining to medical fees, especially in cases of litigation between patient and practitioner.

The much discussed problem of professional secrecy is treated in a way different from the principles that have hitherto obtained: "Every physician must maintain professional secrecy concerning all facts coming to his knowledge as a physician, unless the disclosure of such facts is necessary for the public interest, especially in regard to public health or justice, or for paramount private interests. The duty of reporting criminal facts spontaneously, as well as when a witness in court, is expressly stated." A physician who gives knowingly a false certificate to a patient is liable to heavy fines or imprisonment. The medical council has control over medical men only in matters pertaining to professional interests. In all matters that pertain to the relations between physicians and the law or the public, the public administrative bureau has jurisdiction. Questions of infringement of medical laws—not medical ethics, which remain in the domain of the council—will be submitted to a committee consisting of three judges, two officers of the board of public health and four medical practitioners. If the offense is serious, this court may revoke the culprit's right to practice for a period of time (three months, six months, a year, two years or six years), or even permanently. Even these few selected chapters show that the leading idea of the new bill is absolutely antimedical. It contains hardly one demand formulated by the profession in repeated sittings of its committees, and puts the whole profession under the control of nonmedical persons. The fundamental principle of modern democracy, which in political affairs has obtained a complete victory in this country, that the interests of every section of the people be controlled by its own representatives, is here absolutely neglected. Needless to say, the profession is not willing to submit to such procedures. As it has no means for making itself heard and felt in the national assembly—there is only one physician among the 165 members who compose it—the chief resistance must be organized and offered by the so-called "Wirthschaftliche Organisation," a corporation that unites nearly all physicians in the country. At this moment elections for a large fighting council are taking place in this body, with a view of preparing the ground for the impending battle. All the paragraphs of the new bill, especially those dealing with professional secrecy, with jurisdiction in offenses against the medical laws, and with the influence of the medical council are regarded as injurious to the interests of the profession. Should the law be passed without consideration of the just wishes of our representatives, we may find ourselves soon faced by the necessity of enforcing our views by the strongest weapon at our disposal—a strike of physicians.

A Conflict with Forensic Experts

During the last few months, the attitude of the higher and lower courts has been notably severe in all matters dealing with the induction of abortion by physicians. The chief prosecuting attorney of the state has issued a warning to all courts and medical corporations advising them to pay special attention to cases of artificial or natural abortion. In fact, an order has been issued requiring physicians and midwives to report to the police every instance of abortion in which artificial inducement was even "open to suspicion." A storm of indignation on the part of the profession resulted on the grounds that professional secrecy ranked before submission to such an order, and the physicians did not comply with these demands of the public prosecutor. Quite recently, two members of the profession, a physician and a gynecologist, have been charged with having in a certain case procured an abortion without having satisfied themselves of the absolute necessity of the procedure. The charge rested chiefly on the evidence of a forensic expert, who obtained it from the patient about three months after the incident, and on the scanty records of the case in a private hospital. The accused were sentenced to three months' imprisonment. Their defense that the induction of premature emptying of the uterus was of paramount importance because of the condition of the mother was contradicted by the forensic expert, a man working in the department of pathologic anatomy and forensic pathology, who for years had had no experience with the conditions that prevail at the sickbed of a living patient. The general medical council protested vigorously against the breach of the rules of evidence, which require that expert witnesses must really be competent to give evidence on the subject they are called on to explain. This written formal protest was forwarded to the ministry of justice, but has remained without answer. At a recent combined meeting of the Vienna Medical Society, the Society of Specialists and various other medical corporations, the matter was discussed and a resolution was passed, which also will be forwarded to the ministry of justice. This resolution says: "Incidents of recent date prove that the present conditions of obtaining expert evidence on medical subjects are obsolete and should not be continued. Clinical medicine has within the last few decades made enormous progress as regards the practical application of theoretical findings. The forensic experts serving at present in our courts have no bedside experience at all, as they are all, without exception, theorists even though they hold a high position in their specialty. Therefore, the profession postulates that in all forensic cases, when practical clinical work is under discussion, clinical specialists or eminent practitioners should be called to give opinions on the case." If this demand also remains fruitless, there will be no recourse but to apply to the legislature for relief against medieval judicial practices.

Increased Influx of American Physicians

The facilities for study offered by the reorganization of the Vienna Medical Faculty are being ever more and more appreciated by foreign students. There is an increasing influx of

medical men, especially from the United States, seeking postgraduate work particularly in otorhinolaryngology, materia medica and laboratory work. Excellent opportunities are afforded in the pathology museum, where from twenty-five to thirty different fresh specimens obtained from the necropsies are available daily; and in the surgical departments, where the two large accident wards—annexes of the surgical clinics—offer excellent opportunities to those who wish to familiarize themselves with every-day surgery. The American Medical Association of Vienna, which has resumed its work in prewar fashion, is doing excellent work in finding suitable classes for those who desire to make the best use of their time and money in this city.

BERLIN

(From Our Regular Correspondent)

Dec. 15, 1923.

Physicians and the Health Insurance Societies

Not much progress has been made as yet in settling the controversy between the physicians and the health insurance societies. Negotations have been begun between the physicians and the federal ministry of labor, but no definite action has been taken. The federal committee, which is supposed to function as a committee of arbitration, has not been recognized by the physicians, because it is composed of members of the federal ministry of labor and is therefore not regarded as impartial.

Increase in the Incidence of Tuberculosis

From an official source, the following appeal with respect to the increase of tuberculosis occasioned by economic conditions has been issued:

The extreme economic distress throughout the country has compelled many of the health centers to restrict their activities or even close their doors. The treatment of the sick among those insured in the health insurance societies has been seriously impaired. Hospital treatment is afforded in only rare instances, since neither the health insurance societies nor the charitable organizations are in a position to supply the means. The social welfare centers also are fighting for existence. In many places it has been necessary to dismiss part of the personnel and consequently to restrict the work. Many new welfare centers are needed, but their creation at present is out of the question. In the last few months, a great number of welfare centers for the tuberculous have been obliged to close. Almost daily, appeals from welfare centers throughout the country are received by the social welfare commission of the German Executive Committee for the Combating of Tuberculosis. The social welfare commission, owing to the fact that its own funds are nearly exhausted, is all too often unable to give the needed assistance. Then, too, there is increasing danger of the spread of tuberculosis as the result of the high cost of food, the growing unemployment, the bad housing conditions and the poor care given the sick. In addition, the government has now adopted a policy of retrenchment, which includes a reduction of personnel; in many places welfare officers are slated for dismissal, since the authorities regard expenditures for welfare and hygiene work as a dispensable outlay. Consequently, the campaign against tuberculosis, as it affects not only the central bureaus but also the German Executive Committee for Combating Tuberculosis, the provincial committees, the provincial and district societies and the local welfare organizations, is hampered more and more, if it is not rendered actually impossible. In fact, it may be justly said that, unless aid comes soon, our crusade against tuberculosis will suffer complete shipwreck. With the low functioning capacity of the health insurance societies and the communes, the greatly restricted activities of the social welfare centers and the lack of sufficient domiciliary welfare work, it would seem inevitable that the number of children infected will increase enormously and that the next generation will be quite generally infected. The mortality of children from tuberculosis seems bound to increase, for, even in prosperous years, our endeavors to reduce the mortality from tuberculosis among children have met with only indifferent success. When the children who now become infected reach the age when they should become self-supporting, the number of new cases of tuberculosis that develop will doubtless be exceedingly large.

Vital Statistics of Large German Cities, April-June, 1923

The decrease in the birth rate of forty-six large German cities has been so rapid that, from April to June, only 65,925 living births, as compared with 69,631 in the preceding quarter and 75,726 in the second quarter of 1922, were recorded. Whereas in the second quarter of 1922 the birth rate was 18.5, in the second quarter of 1923 it was only 15.8. Thus, the birth rate for the large cities is almost as low as the minimal rates for the war years. Since, in the quarter during which the infants born in the second quarter of 1923 were conceived, namely, the third quarter of 1922, the catastrophal depreciation of the German mark had just begun, we must, in view of the close relationship between the exchange value of the mark and the birth rate, be prepared to face a further reduction of the birth rate. On the other hand, the mortality during the last quarter and likewise during the last three quarters has been lower than during the corresponding periods of the previous year. This fact is the more striking since, from the end of May to the end of June, all Germany experienced a cold spell such as had never been previously recorded for that time of year. The effect of the abnormal weather conditions on the public health was, however, observable only in the retardation of the decline in the number of deaths due to tuberculosis, pneumonia and other diseases of the respiratory organs, which can usually be counted on after May. Although the total number of deaths in the second quarter of 1923 (52,846) was less than during the corresponding period of the previous year (55,345), the number of deaths from tuberculosis in the second quarter of 1923 (7,963) was 559 greater than in the second quarter of 1922 (7,404). Accordingly, the general mortality rate dropped from 13.5 to 12.7, while the tuberculosis mortality rate rose from 1.80 to 1.91 in the two quarters under comparison, on an annual basis and per thousand population. This striking discrepancy proves that, in the present economic chaos, the health of only a comparatively small part of the population suffers, for, if the general health of the whole population were affected, an increase in the general mortality rate would have been inevitable, as is shown by the mortality statistics for all the recent critical years, especially for the famine years of 1917 and 1918, and the mortality rate could not continue to range below the minimal mortality rates recorded before the war, as has been the case since the first quarter of 1921.

Personal

December 6, Geheimrat J. Rosenbach, for many years director of the surgical university policlinic in Göttingen, died at the age of 80. In his early years, he had specialized in natural science, particularly chemistry, having studied under Wöhler; later he took up medicine. His graduation thesis (Pathologic Changes Following Subcutaneous Injection of Mercuric Chlorid), however, harks back to his former studies. After passing his state examination, he became an assistant at the Pathologic Institute in Göttingen, but later turned his attention to surgery. In 1872, he became an instructor in the University of Göttingen; his inaugural dissertation on "The Effects of Phenol (Carbolic Acid) on Pyemic Infections" again betrays the influence of his studies in chemistry. In 1877,

he became director of the surgical policlinic. His more advanced knowledge of chemistry helped to put him in a position to take part in the hygienic and bacteriologic research work which, under the influence of Pettenkofer and Koch, was launched around 1880. To this category belong his investigations on suppuration of chemical origin, gases produced by bacteria, and on the infectiousness of tuberculous pus. In 1884, he published his important monograph on micro-organisms found in wound infections in man and the etiology of acute osteomyelitis, associated with which he had previously found *Staphylococcus aureus*. In 1886 he demonstrated the transmissibility of tetanus. He was unable to obtain a pure culture of the tetanus bacillus, but he established the identity of his bacillus with that cultured by Nicolaier from garden soil and which was later shown by Kitasato to be the tetanus bacillus. Rosenbach was the first to develop a pure culture of the causative agent of the disease he named "erysipeloid"; namely, *Streptothrix rosenbachii*. He published articles also on "The Deeper, Suppurative Cutaneous Affections Due to Molds," "Hospital Gangrene in German Surgery," and "Surgical Bone and Joint Affections," which appeared in the Handbook of Practical Medicine, by Ebstein and Schwalbe. In 1910, he made known a tuberculin of his own preparation, which was called the Rosenbach tuberculin. Rosenbach was a modest, unassuming man who by his kindly ways won the respect of his pupils and the friendship of his colleagues.

December 15, Professor Schneidemühl, formerly connected with the department of comparative pathology in Kiel, now living in retirement in Elbing, completed his seventieth year. He was formerly a veterinarian, having been for several years county veterinarian. After finishing his medical studies and spending a period as assistant professor in the School of Veterinary Medicine in Hamburg, he became, in 1890, an instructor in veterinary medicine in the University of Kiel; in 1892 he accepted a call to the University of Breslau, but returned in 1893 to Kiel, where, in 1900, he was given a chair in comparative pathology. His work on comparative pathology, therapy in man and domestic animals, and protozoa as disease-producing agents in man and domestic animals, are well known and their value is recognized. For some time past, he has devoted himself to the psychology of handwriting, and in 1911 he published a textbook on the estimation of handwritings, and a treatise on handwriting in relation to character. In 1918 and 1919, further monographs on handwriting were published. On several occasions, he has been asked to serve in court trials as a handwriting expert.

Marriages

BENJAMIN FRANKLIN BARNES, JR., Yonkers, N. Y., to Miss Kathryne V. Potter of New York City, Dec. 22, 1923.

FRANCIS BURTON BLACKMAR, Columbus, Ga., to Miss Isabel McCown Lyman of New Orleans, Nov. 3, 1923.

CHARLES LYNWOOD COX, Weeks, La., to Miss Sophia Garland Wolfe of New Orleans, Oct. 30, 1923.

HENRY CONE MAGEE, Nashville, Tenn., to Miss Agnes Adele Tomes of New Orleans, Dec. 19, 1923.

RICHARD MILLETT FEE, New Virginia, Iowa, to Miss Adaline Brooks of Greenfield, Dec. 15, 1923.

CYRIL GUSTAVUS DEVRON to Miss Grace St. Clare Ward, both of New Orleans, Nov. 3, 1923.

JOHN LUTHER MAROON, Santa Ana, Calif., to Miss Lucy Wood of Anaheim, Dec. 15, 1923.

JOSIAH M. STANLEY to Mrs. Elmira A. Wadsworth, both of Northboro, Mass., Dec. 7, 1923.

HENRY S. BROWNE, Tulsa, Okla., to Miss Dorothy A. Malone of St. Louis, Dec. 31, 1923.

ROGER HOLCOMB to Miss Edna Mihnos, both of Portland, Ore., Dec. 19, 1923.

Deaths

Thomas Passmore Berens ✠ New York; University of Pennsylvania School of Medicine, Philadelphia, 1887; professor of otology at the Manhattan Eye, Ear and Throat Hospital and Medical School; member of the American Laryngological Association, the American Laryngological, Rhinological and Otological Society, the American Otological Society; aged 57; died, Dec. 28, 1923, of arteriosclerosis.

Bertha Van Houten Anthony, New York; Pulte Medical College, Cincinnati, 1902; formerly assistant professor of pathology at her alma mater; member of the Society of American Bacteriologists and of the state board of health; at one time on the staffs of the Ohio Hospital for Women and Children, and the Home of the Friendless, Cincinnati; aged 47; died, Dec. 16, 1923, of bronchopneumonia.

Earl Christie Follett, Washington, D. C.; Bowdoin Medical School, Portland, Maine, 1918; professor of physiology and pharmacology at the George Washington University Medical School, Washington; served in the M. C., U. S. Army, during the World War; aged 30; died, Dec. 15, 1923, of cerebral hemorrhage, while sitting in his automobile.

Walton Todd Burres, San Francisco; Medical Department of the Tulane University of Louisiana, New Orleans, 1892; formerly a research worker for the Rockefeller Foundation in Central America and at one time director of the International Health Commission at Panama, Canal Zone; aged 52; died, Dec. 15, 1923.

Robert McConaughy ✠ York, Neb.; Jefferson Medical College of Philadelphia, 1875; past president of the Nebraska State Medical Association, and of the American Association of Railway Surgeons; formerly member of the board of education, city physician and health officer; aged 71; died, Dec. 18, 1923.

William Wayland Frames, Baltimore; College of Physicians and Surgeons, Baltimore, 1892; formerly demonstrator in chemistry at his alma mater, and professor of diseases of the ear, nose and throat at the Maryland Medical College, Baltimore; aged 56; died suddenly, Dec. 26, 1923.

Byron Stanton, Cincinnati; Miami Medical College, Cincinnati, 1857; emeritus professor of diseases of women and children at the University of Cincinnati College of Medicine; Civil War veteran; formerly city health officer; aged 89; died, Dec. 22, 1923, of angina pectoris.

Earle S. Winters, Dublin, Texas; University of Tennessee College of Medicine, Memphis, 1897; member of the State Medical Association of Texas; past president of the Erath County Medical Society; formerly city health officer; aged 53; died, Oct. 19, 1923, of pneumonia.

William Graefe ✠ Sandusky, Ohio; University of Wooster Medical Department, Cleveland, 1870; president of the Citizens' Bank; member of the board of health, and for eleven years member of the board of education; aged 72; died suddenly, Dec. 27, 1923, of heart disease.

Sanford L. Underwood, Pittston, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1893; member of the Medical Society of the State of Pennsylvania; on the staff of the Pittston Hospital; aged 53; died, Dec. 17, 1923, following a long illness.

Lewis Leonidas Rogers, Kingston, Pa.; Jefferson Medical College of Philadelphia, 1881; member of the Medical Society of the State of Pennsylvania; for many years lecturer on hygiene in Wyoming Seminary; aged 71; died, Dec. 21, 1923, of pneumonia.

Ralph Teancum Merrill ✠ Smithfield, Utah; Chicago (Ill.) College of Medicine and Surgery, 1910; served in the M. C., U. S. Army, during the World War; at one time mayor of Smithfield; aged 51; died, Dec. 18, 1923, of heart disease.

Edward S. Highley, Glenellyn, Ill.; Chicago Homeopathic Medical College, 1886; formerly county physician; aged 61; was instantly killed, Dec. 31, 1923, when the automobile in which he was driving was struck by a train.

William Parker, Peoria, Ill.; Bennett Medical College, Chicago, 1880; Medical Department of the University of the City of New York, 1890; member of the Illinois State Medical Society; aged 72; died, Dec. 16, 1923.

William Clark Berry, Shadyside, Ohio; Western Reserve University School of Medicine, Cleveland, 1919; aged 32;

recently established a hospital at Kabongo, Belgian Congo, Africa, where he died, Nov. 23, 1923.

George M. Schaubel ✠ Chicago; Chicago Homeopathic Medical College, 1894; on the staffs of the Norwegian-American, and the Norwegian Deaconess hospitals; aged 50; died, Dec. 21, 1923, of myocarditis.

Albert Clark Rogers, Los Angeles; Medical Department of the University of the City of New York, 1873; member of the Clinical and Pathological Society of Los Angeles; aged 73; died suddenly, Dec. 23, 1923.

Stephen Wythe, Oakland, Calif.; Cooper Medical College, San Francisco, 1895; member of the California Medical Association, and the Pacific Coast Oto-Ophthalmological Society; aged 49; died, Dec. 25, 1923.

Lee Perry Kaull, Los Angeles; Kansas City (Mo.) Medical College, 1898; aged 51; died, Dec. 20, 1923, at the Ramona Hospital, San Bernardino, of an overdose of morphin, presumably self-administered.

D. Edmund Smith, Minneapolis; Rush Medical College, Chicago, 1894; served with the American Red Cross, in France, during the World War; aged 56; died, Dec. 15, 1923, following a long illness.

Bennett White Dewar ✠ Cooperstown, N. Y.; Albany (N. Y.) Medical College, 1892; aged 51; chief surgeon of the Mary Imogene Bassett Hospital; died suddenly, Dec. 22, 1923, of heart disease.

William Guitton Le Boutillier ✠ Long Lake, N. Y.; Medical Department of Columbia College, New York, 1883; veteran of the Spanish-American War; aged 64; died, Dec. 23, 1923, of pneumonia.

William Henry Hobbs Stocks ✠ Wilmington, Del.; Medico-Chirurgical College of Philadelphia, 1913; aged 40; died, Dec. 22, 1923, at the Delaware Hospital, following an appendectomy.

Fielding Lewis Ashton, Seattle; University College of Medicine, Richmond, 1905; member of the Washington State Medical Association; aged 42; died, Dec. 17, 1923, following a long illness.

William H. Davis ✠ Albany, Ore.; Willamette University Medical Department, Salem, Ore., 1883; aged 63; died, Dec. 14, 1923, at St. Vincent's Hospital, Portland, following an operation.

Christopher F. Korner, New York; New York University Medical College, 1888; member of the Medical Society of the State of New York; aged 61; died, Dec. 19, 1923, of pneumonia.

Eli J. Bettis, Cisco, Texas; Atlanta (Ga.) Medical College, 1881; Tennessee Medical College, Knoxville, 1901; member of the State Medical Association of Texas; aged 65; died, Oct. 16, 1923.

Andrew J. Chittick, Burlington, Ind.; Medical College of Ohio, Cincinnati, 1883; member of the Indiana State Medical Association; aged 67; died, Dec. 21, 1923, following a long illness.

Charles A. Palmer ✠ Bath, Me.; Bowdoin Medical School, Portland, Maine, 1892; aged 56; died, Dec. 16, 1923, of a self-inflicted bullet wound while suffering from ill health.

Thomas Edward Beard, Portland, Ore.; Rush Medical College, Chicago, 1886; had retired from the practice of medicine to become a florist; aged 63; died, Dec. 17, 1923.

Charles Leeds, Chelsea, Mass.; Boston University School of Medicine, 1878; member of the school board for six years; aged 74; died, Dec. 13, 1923, following a long illness.

Davis R. Emmons, North Lewisburg, Ohio; Medical College of Ohio, Cincinnati, 1883; aged 69; died, Dec. 12, 1923, at the Ohio Masonic Home, Springfield, of senility.

Chester Owen Smith, Urania, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1922; aged 27; died, Nov. 23, 1923, at Casapalca, Peru, of malaria.

Adolph August Max Wiskow, New York; Eclectic Medical College of the City of New York, 1900; aged 60; died, Nov. 22, 1923, of chronic nephritis and heart disease.

Jay Tuttle, Astoria, Ore.; Willamette University Medical Department, Salem, 1880; for many years federal quarantine officer; aged 82; died, Dec. 14, 1923, of senility.

Charles Harris Hibbe, Chicago; Hahnemann Medical College and Hospital, Chicago, 1895; aged 69; died, January 3, at the Alexian Brothers' Hospital, of septicemia.

A. Lincoln Feltwell, Altoona, Pa.; Jefferson Medical College of Philadelphia, 1887; aged 61; died, Dec. 24, 1923, in a hospital at Philadelphia, following a long illness.

Virginia Paine Smith, Fallon, Nev.; Hahnemann Medical College of the Pacific, San Francisco, 1901; aged 82; died, Nov. 28, 1923, of carcinoma of the stomach.

Robert Newton Tooker, Berkeley, Calif.; Chicago Homeopathic Medical College, 1900; Rush Medical College, Chicago, 1901; aged 48; died, January 2, at Carmel.

Joseph James Kane, Buffalo; Niagara University Medical Department, Buffalo, 1892; aged 52; died, Dec. 15, 1923, of injuries received in a street car accident.

Franklin Chamberlain Wells, New York; Bellevue Hospital Medical College, New York, 1887; aged 63; died, Dec. 19, 1923, at his home in Bloomfield, N. J.

George Brinton Wix, New York; Hahnemann Medical College and Hospital of Philadelphia, 1890; aged 59; died, Dec. 19, 1923, following a long illness.

John Hickman Johnson, Nashville, Tenn.; Vanderbilt University Medical Department, Nashville, 1879; aged 69; died, Dec. 4, 1923, following a long illness.

George Henry Noxon ✠ Darien, Conn.; Baltimore (Md.) Medical College, 1893; for twenty years health officer of Darien; aged 61; died, Dec. 26, 1923.

Adam E. Leaman, West Willow, Pa.; University of Pennsylvania School of Medicine, 1893; aged 60; died in December, 1923, following a long illness.

Frances Murray Blumauer, Portland, Ore.; Woman's Medical College of Pennsylvania, Philadelphia, 1873; aged 86; died, Dec. 14, 1923, of senility.

Charles M. Burk ✠ Philadelphia; University of Pennsylvania School of Medicine, 1891; aged 58; died, Dec. 28, 1923, at his home in Elkins Park.

Henry Leaman, Leaman Place, Pa.; Jefferson Medical College of Philadelphia, 1864; Civil War veteran; aged 85; died, Dec. 19, 1923, of senility.

Robert Wiley Rea, Wesson, Miss.; Medical Department University of Louisiana, New Orleans, 1869; aged 79; died, Dec. 17, 1923, of senility.

Stephen Yates Weidman ✠ Rockport, Me.; Medical Department of the University of the City of New York, 1886; aged 71; died, Dec. 30, 1923.

Thomas J. Holcomb, DeWitt, Ark.; Missouri Medical College, St. Louis, 1887; aged 56; died, Dec. 12, 1923, following a long illness.

John Hagen Hudgin, Spokane, Wash.; State University of Iowa College of Medicine, Iowa City, 1875; aged 72; died, Dec. 11, 1923.

Thomas Roland Howle, Andrews, S. C.; University of Nashville (Tenn.) Medical Department, 1906; aged 43; died, Nov. 7, 1923.

Joseph Carrow ✠ Odessa, Del.; Jefferson Medical College of Philadelphia, 1893; aged 57; died, Dec. 15, 1923, of pneumonia.

George F. Hesler, Indianapolis; Kentucky School of Medicine, Louisville, 1882; aged 74; died, Dec. 18, 1923, of heart disease.

Jarrott C. Flowers, Lyles, Tenn.; University of Tennessee College of Medicine, Memphis, 1894; aged 57; died, Dec. 20, 1923.

Alexander Barnett Baird, Oklahoma City; Jefferson Medical College of Philadelphia, 1880; aged 65; died, Dec. 19, 1923.

Archibald M. Rupert, Attica, Ind.; Medical College of Ohio, Cincinnati, 1877; aged 69; died, Dec. 19, 1923, of carcinoma.

James Louis Kelley, Gibson, Ga.; Emory University School of Medicine, Atlanta, 1914; aged 31; died, Dec. 19, 1923.

Walter Clark Lewis, St. Louis; Missouri Medical College, St. Louis, 1875; aged 69; died suddenly, Dec. 12, 1923.

James Francis Hancock, Morris, Ala.; Louisville (Ky.) Medical College, 1888; aged 71; died, Dec. 20, 1923.

Albert Walter Binckley, Cleveland; Ohio Medical University, Columbus, 1902; aged 43; died, Dec. 14, 1923.

Emil Steiger, Prairie du Chien, Wis. (years of practice); aged 85; died, Dec. 19, 1923, of heart disease.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

CASE'S RHEUMATISM CURE

The Latest Thing in the "Free Prescription" Fake

A careful study of modern quackery allows one to draw certain conclusions that are so generally true that they almost reach the dignity of axioms. One of these is: Once a quack, always a quack. The lure of easy money is irresistible. Individuals who have once gone into the business of making a living by their wits *via* the quackery route find it difficult to really work for a living. Case after case in the files of the Propaganda department bear mute testimony to this fact.

Paul Case of Brockton, Mass., publishes advertisements in publications that are not too particular about the class of advertising they carry. He informs the public that he has a wonderful prescription for rheumatism which he is willing to give free. Case's advertisements represent him in the uniform of the army of the United States giving the salute. The advertisement headed "Rheumatism," reads:

"I have returned home after 2 years' service in France with the A. E. F.

"While in France I obtained from a noted French physician a prescription for the treatment of Rheumatism and Neuritis. I have given it to thousands with wonderful results. The prescription costs me nothing. I ask nothing for it. I will mail it if you will send me your address. A postal will bring it. Write today."

THE RHEUMATISM CURE OF CASE, SR.

A few years ago the father of Paul Case, Jesse A. Case, was exploiting "Case's Rheumatic Specific." It was a fraudulent piece of mail-order quackery. In 1914 the Propaganda department exposed Case's quackery. An adjunct to the rheumatism cure of Jesse A. Case was a "Liver Tablet." This fact should be borne in mind in connection with what follows.

More than five years after THE JOURNAL had shown the fraudulence of the business of Jesse A. Case, the United States government interfered and put Case out of business by declaring his scheme a fraud and denying him the use of the United States mails. Like most quacks Case was a poor loser and within a month he made application for the revocation of the fraud order on the grounds that he had entirely discontinued his fraudulent business and was engaged in a legitimate field. In addition Case filed an affidavit swearing that he had discontinued the selling of his "rheumatism treatment" and declaring that it would "not be revived any time in the future." The postal authorities accepted Case's statement and affidavit and revoked the fraud order. This was in September, 1919.

In the old advertising matter of Jesse A. Case, the name and picture of his son Paul appeared not only on the trade package but also on the letterheads and on the cover of a booklet (see illustration) that was distributed in the sale of the fraud. In this advertising, it was stated that this young man had spent two years in Europe and had toured certain European countries, as well as Canada, "all devoted to the study of RHEUMATISM."

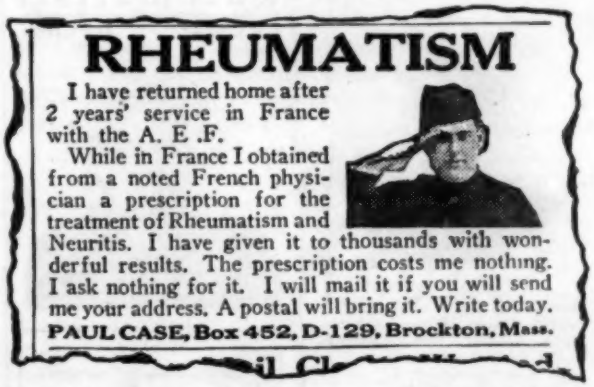
THE RHEUMATISM CURE OF CASE, JR.

Now comes the advertising campaign of Paul Case. Those who answer his advertisements, offering to send free a prescription for the treatment of rheumatism, which he alleges to have "obtained from a noted French physician," one "Dr. Beaupré," receive a printed letter in imitation typewriting. In this Case gives what purports to be a brief biography. Not a word is said to sustain the old claim made by his father, that Paul had toured various European countries for over two years "all devoted to the study of rheumatism." It seems that Paul Case was for two years with the Massachusetts Nautical Training School and during that time the ship visited several European countries. During these two years, according to Paul Case's own statement, he was studying electrical engineering.

Case, Jr., goes on to state that while with the U. S. Base Hospital No. 6, during the war, he was given a leave of absence and went to Aix les Bains. When he reached that town he claims that he found "thousands upon thousands" of soldiers sick "with one disease, Rheumatism, train loads coming for treatment and train loads leaving for the battle front and trenches." Case claims, further, that he became acquainted with a "Dr. Beaupré" an old French physician who told him that rheumatism incapacitated more men than bullets, "But," said the doctor, "We soon fix them up." Case asked "Dr. Beaupré" if he would give him the prescription used in accomplishing these marvels which, according to Case, the French physician did.

After Case returned to America, the circular letter continues, he gave copies of the prescription to his friends and neighbors who had rheumatism. They "reported such good results that others began to ask for this valuable prescription." As a result, Case states that he continues to give the prescription free to any one who needs it for, as he magnanimously puts it: "If I can be the means of bringing good health, comfort, and freedom from pain to my fellow man I feel amply repaid."

Then follows the "free" prescription. By a curious coincidence, this marvelous treatment for rheumatism used by the French doctor is strikingly similar to the preparations used in the fraudulent treatment exploited by Paul Case's


RHEUMATISM
I have returned home after 2 years' service in France with the A. E .F.
While in France I obtained from a noted French physician a prescription for the treatment of Rheumatism and Neuritis. I have given it to thousands with wonderful results. The prescription costs me nothing. I ask nothing for it. I will mail it if you will send me your address. A postal will bring it. Write today.
PAUL CASE, Box 452, D-129, Brockton, Mass.

Typical advertisement of Paul Case who disgraces and capitalizes the uniform of the United States in exploiting a piece of mail-order quackery, that of selling an alleged cure for rheumatism. Case's father, a few years ago, also sold a mail-order "cure" for rheumatism until the federal authorities declared his business a fraud and denied it the use of the mails.

father, Jesse A. Case, before the government interfered with that lucrative swindle. The prescription for the "Rheumatism Tablets" of Paul Case calls, among other ingredients, for colchicum root and sodium salicylate, the main ingredients of the "Rheumatism Tablets" of Jesse A. Case. The formula for Paul Case's "Liver Tablets" accessory calls for cascara, aloin, podophyllin and sodium bicarbonate, which were also ingredients of the "Liver Tablets" of Jesse A. Case.

THE "JOKER"

However, Paul Case's prescription starts out with a drug that was not in the nostrum exploited by his father. This drug is "Powdered Gadoeng (Java)," which is the Senegambian in the therapeutic woodpile. Paul Case emphasizes in the letter that "Best results are obtained from Genuine Gadoeng which is imported from Java." The letter then closes with a paragraph stating that Paul Case has "made arrangements with a reliable druggist to keep the tablets on hand" and the day he receives your order enclosing $1.50 he "will send you treatment enough to last 10 days."

Those that do not bite on this first letter receive another letter in two weeks' time expressing wonder whether they "received the prescription promptly." Case goes on to state that many of those to whom he has sent the prescription had ordered the treatment directly from him. Then he continues:

"Some have written that they have been subject to delay in having the prescription filled by their druggist, as many did not have the drugs in stock. Many have sent me samples of the medicine supplied them. I

do not want to criticize but will say this, if you send to me I will promptly send the treatment properly prepared of true and standard ingredients and at a moderate price."

Case then states that he encloses a sample of the "Rheumatic Tablets" and the "Liver Tablets" to show you "just what they should be like if properly compounded." Before closing this letter Case gives another slap at the retail druggist by stating that if the correspondent had had the prescription put up by his druggist he, Case, "would deem it a favor" to learn what results are being obtained. Accompanying this second letter is a sheet of testimonials of the usual type and a blank for the recipient to fill in and return with the names of friends, neighbors or relatives who may be suffering from rheumatism. Case says that he will mail prescriptions at once to such individuals and, tongue in cheek, he adds: "I feel it a duty to do this."

THE "FREE PRESCRIPTION" GAME

The "free prescription" game has long been worked by mail-order quacks. Presumably, there are always hopeful sufferers who have confidence enough in the printed word to believe that men like Paul Case will spend money on advertising and postage with no other idea in mind than that of helping suffering humanity.

PAUL CASE - SON
Two years in Europe Toured England, Denmark Belgium, Holland, Sweden, Austria, Germany, France, Spain, Portugal, Italy and Canada, all devoted to the study of
RHEUMATISM
Rheumatism
Its Cause. Its Cure.
JESSE A. CASE
I am the man that conquers Rheumatism. Fifteen years devoted to this one subject.

A photographic reproduction (reduced) of the back covers of a booklet that used to be sent out by Jesse A. Case, father of Paul Case, in exploiting a fraudulent cure for rheumatism. Note the statement that Paul Case had spent two years touring Europe "devoted to the study of rheumatism." The facts seem to be that Paul Case visited certain European countries when he was studying electrical engineering on the ship of the Massachusetts Nautical Training School.

Some of the "free prescription" fakes have, as the "joker," a drug that never existed. Case is too shrewd to do this. He profits by the experience his father had with the federal authorities. Possibly the game was worked out for him by individuals who make it a business to tell those who wish to go into mail-order quackery how to humbug the public and still keep out of jail.

In any case, the ingredient "Powdered Gadoeng (Java)" is one that not one druggist in 10,000 has ever heard of or would carry in stock. Wild Yam is one of the thousand-and-one herbs that have been tried in the therapeutic balance and found wanting. The Wild Yam of the United States is *Dioscorea villosa*. It has been and, to some extent, still is used by the eclectics who consider it efficacious in certain forms of colic. It has also been used by the southern negroes for "rheumatism." Gadoeng is a different variety, *Dioscorea hirsuta*, which grows in the island of Java. It was studied thirty years ago and has never had any place in medicine. It is possible that there may be a drug store somewhere in the United States that carries *Dioscorea hirsuta* in stock, but it is doubtful. Case, therefore, is playing safe when he includes it as an ingredient in a "free prescription" knowing that it is impossible for the patient to get it filled. The scheme is just as efficacious as that of the faker C. A. Abbott who advertised a free prescription for consumption and included in it the mythical substance "Extract Blodgetti" or of the equally mysterious "Umckaloabo root" and "Chijitse" of Stevens, the English "consumption cure" quack.

The facts are, Paul Case would humbug just about as many people even if he left off the "Powdered Gadoeng (Java)" from his prescription. No druggist could afford to go to the work of making tablets from the formula given for the "rheumatism tablets" and "liver tablets" and sell them at the price that Case can sell them at when he buys them by the thousand or half million. They could, of course, sell more efficient stock tablets for a fraction of the price.

Whether there is any "Dr. Beaupré" in Aix les Bains, or if there is, whether he ever had such a prescription as that offered by Paul Case, we do not know. But it is highly improbable. In the knowledge we have of the fraud perpetrated by Case, Sr., in the mail-order sale of a fake cure for rheumatism it is easier to believe that Paul Case has merely modified the "come on" game of his father.

That Paul Case is a quack is obvious. Whether he is technically perpetrating a fraud is for the authorities to decide. We trust that that efficient but overworked branch of the federal government, the Fraud Order Department of the Post Office, will look into the activities of Case, Jr., as it did into those of Case, Sr., and do what it can to protect the public from this latest piece of mail-order quackery.

Correspondence

"THE FALLACY OF SAHLI 'DESMOID REACTION'"

To the Editor:—Shorn of all that is unessential, the criticism of Dr. Hermann Sahli (The Journal, January 5, p. 51) of my method of proving the digestion of connective tissue within the small intestine of the human being, depends on the following: 1. Is the end of the rubber tube with the attached tip actually passed within the small intestine? 2. Can the detachability of the metal tip, with the end of the rubber tube still present within the small intestine, be a proper criterion for the opinion that the connective tissue suture has disintegrated?

1. Dr. Sahli states that the procedure is of questionable value, for the following reasons: That the passage of a rubber tube into the duodenum is a procedure that may "occasionally be successful," and the fact that this may occur with "a moderate amount of certainty has not been proved." It has been my invariable habit to check the location of the rubber tube roentgenologically. It is my experience, under such a check, that the end of the tube may be made to pass into the duodenum in the majority of cases without unusual difficulty. He states that "roentgen-ray examinations, which should establish this fact, are in the majority of cases not made, and the conclusion that the tube has passed into the duodenum is generally accepted somewhat lightly because some bile-stained fluid is withdrawn by the tube. I should like to refer Dr. Sahli to the following articles, of which he is apparently unaware, which dispose of this criticism as far as I am concerned:

Experiences with Duodenal Feeding, The Journal, Aug. 30, 1919, pp. 670-672.
The Intestinal Tube, Its Significance and Applications, The Journal, March 6, 1920, pp. 664-667.
Roentgenographic Evidence of Ulcer Healing, The Journal, Jan. 22, 1921, pp. 231-234.
Importance of Roentgen-Ray Localization of the Intestinal Tube, *New York M. J.* **115**: 690-692 (June 7) 1922.

In the article last named, I wrote: "Not only may a regurgitation of duodenal fluid occur into the stomach, but, in addition, the end of the tube, although still in the stomach, may be sufficiently near the pyloric sphincter so that by means of the syringe sufficient suction may be produced to deliver

fluid from the duodenum. This possibility is indicated in Figure 1. In this case, although duodenal fluid was obtained, a roentgenogram of the rubber tube demonstrated that the end had not advanced into the duodenum." I wish to emphasize, therefore, that the criticism of Dr. Sahli as to the method of demonstrating the localization of the rubber tube is far from justified, in that the possibility of error of localization by methods other than the roentgen ray has been appreciated to the fullest extent.

Will the roentgenogram give us absolute assurance as to the location of the end of the rubber tube within the small intestine? I have been able to accomplish this not only by the actual localization of the tube following the curve of what appears to be the duodenum and jejunum, but by still another precaution. It has been my custom to make several perforations in the last inch or so of rubber tubing. Preliminary to taking the roentgenogram, a mixture of barium is injected into the proximal end. Not only is a much clearer outline of the tube obtained in this manner, but, in addition, a small amount of barium escaping through the perforations in the distal end and entering the lumen of the intestine permits the visualization of this area, through the typical roentgenographic appearance of small intestine.

It is therefore my opinion that, with the roentgenographic precautions I have employed, it is possible to carry out a study on the digestion of connective tissue in the small intestine of the human being under actual living conditions, with evidence of an objective nature. Criticism as to the digestibility of connective tissue within the small intestine cannot be based on a criticism of the method I have employed. Criticism, of a justfiable nature, can at best be based only on my conclusion.

2. Is the conclusion as to the digestibility of connective tissue within the small intestine justified? Permit me to refer to a former communication which Dr. Sahli has apparently overlooked, "The Intestinal Digestion of Connective Tissue" (*Arch. Int. Med.* **30**:761-766 [Dec.] 1922). In this publication, I have described a crucial experiment in the case of a patient with achylia gastrica. The roentgenographic localization of the tube is such that there can be no doubt that the end has passed into the jejunum. A roentgenogram forty-eight hours later clearly demonstrated the end of the tube still within the small intestine, and the metal tip previously sewed on with connective tissue in the form of kangaroo tendon, detached and present elsewhere in the intestine. Repeated analysis of the fluid removed from the small intestine in this case indicated the persistence of an alkaline reaction.

After a careful perusal of the contents of Dr. Sahli's letter, I am unable to explain this finding on any ground other than that the intestinal digestion of connective tissue may occur.

Assuming that Dr. Sahli agrees with me in the correctness of the method employed, and I see no reason for his taking exception to it as an experimental procedure scientific in its nature, and objective in its findings, would it not be advisable to controvert my conclusion by employing my method?

JACOB BUCKSTEIN, M.D., New York.

"CERTAIN ELECTRICAL DIAGNOSTIC AND THERAPEUTIC METHODS FROM THE STANDPOINT OF A NEURO-PSYCHIATRIST"

To the Editor:—Dr. Thomas J. Orbison, in referring to the personnel of the men who are practicing the Abrams method (THE JOURNAL, Dec. 15, 1923, p. 2057), says: "Some that I saw are 'hacks' and some are 'quacks,' but the terrible fact remains that all have certificates to practice the healing art in the state of California, and some of them in other states." This statement of Dr. Orbison may mislead; information has come to us of several instances in which individuals are alleged to have been students of Dr. Abrams' electronic methods who hold no form of certificate entitling them to practice any system of the healing art in the state of California. We are informed that the larger majority of the doctors pursuing the course of electronic methods under Dr. Abrams come from other states, with a goodly sprinkling from foreign countries.

C. B. PINKHAM, M.D., Sacramento, Calif.
Secretary-Treasurer, Board of Medical
Examiners, State of California.

DENY DISCOVERY OF PNEUMONIA CURE

To the Editor:—On behalf of Lexington Hospital and Dr. F. S. Kelly, we wish to announce that neither the hospital nor any member of the staff, nor any employee of the hospital, was in any way responsible, directly or indirectly, for the publication of recent articles announcing alleged "revolutionary medical discoveries" as to the effect of injections of mercuric salicylate in increasing the number of white blood corpuscles.

We believe that the effect of such injections has been known to the medical profession for more than twenty years.

Dr. F. S. Kelly, mentioned in the articles, is not the pathologist of Lexington Hospital; the latter was not connected in any way with the giving out of the articles for publication, nor was he directly or indirectly responsible for the views expressed in the articles.

LEXINGTON HOSPITAL,
MORTON DEAN, Superintendent,
S. F. KELLEY, M.D., New York.

"MEDICAL AID IN HASTE"

To the Editor:—In regard to the communication appearing in THE JOURNAL, Dec. 29, 1923, by Dr. James Brown Thornton, relative to the automobile plates that now adorn the automobiles of the Osteopaths in Boston, I wish to state that our city of Norwich, Conn., has long been blessed with similar "insignia" on the car of a chiropractor. It consists of a ring about 3 inches in diameter, enameled red, the hollow of which is occupied by a cross, enameled white. The ring, or circle, which is prominently displayed on both the front and the rear of the machine, shows on its upper part the name, in full, of the "practitioner"; the lower part, the word "chiropractor." What's next?

BORIS J. SOHN, M.D., Norwich, Conn.

"PROBLEMS IN THE CONTROL OF DIPHTHERIA"

To the Editor:—I note in THE JOURNAL, Dec. 22, 1923, page 2073, in Dr. Hayne's article, the statement that "South Carolina in 1910 was the first state to furnish diphtheria antitoxin free to its citizens, black and white." Massachusetts began the manufacture and distribution of diphtheria antitoxin in 1895, supplying 30,000 c.c. in the year ending March 31, 1896. LYMAN ASA JONES, M.D., Swampscott, Mass.

PLIGHT OF AMERICAN INSTRUMENT MAKERS

To the Editor:—I want to call attention to a serious condition which the profession throughout the country can remedy to a large extent.

I learn that a number of our own American instrument makers are going out of business because surgeons and hospitals are purchasing approximately 95 per cent. of their steel

instruments of German manufacture. This is surely not patriotic. They should encourage our own instrument makers instead of those of any other nation, and especially those of Germany.

If we are ever to be a self-contained nation, we ought, for patriotic reasons, if for no other, to encourage our own manufacturers. I know of no better way in which this can be brought home to the profession than through the columns of THE JOURNAL. W. W. KEEN, M.D., Philadelphia.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

STATUS OF CHANCRE EXCISION

To the Editor:—1. I am not a syphilologist, nor do I see cases of syphilis anywhere near as often as the physician in the average large city; but, in common with most physicians, I retain much more than a mere academic interest in this disease. What is the present status of chancre excision among leaders in this work; that is, excision after diagnosis has been confirmed by clinical and laboratory work? Is it thought that early excision of the chancre has any material value, either as a step toward a possible abortive treatment or as a step in earlier control and cure of a fresh syphilitic infection? Has any work been done in chancre destruction by electrocoagulation or by electrodesiccation methods; and if so, with what results (*a*) as to possible abortive value and (*b*) as to earlier cure of the infection? If a primary syphilitic lesion, as represented by a fresh chancre, is a sharply circumscribed lesion at a certain stage of its development, comparable perhaps to an epithelioma, it might seem that the often brilliant results secured by electrocoagulation treatment of epitheliomas might be duplicated with the early chancre. At any rate, if no work has been done along this line up to the present, I might suggest the possible value of investigation by physicians whose practice brings them into contact with numerous early chancres.

2. Has any work been done on the treatment of chancres with the roentgen ray, with radium or with phototherapy? If so, with what results? J. B. H. WARING, M.D., Blanchester, Ohio.

ANSWER.—1. Excision or local destruction of the chancre by any method is generally regarded as not desirable treatment in early syphilis. Past experience has demonstrated that it does not abort syphilis, and the researches of the last few years have proved that when the chancre is present, there has already been widespread diffusion of the infection. The removal of the chancre, even the thorough removal of contiguous glands, gives no prospect of eradicating the disease. The experiments of Brown and Pearce on rabbits also have shown that the chancre has much to do with the development of resistance to the infection. It is possible, therefore, that the local removal of even so small a lesion as the human chancre has a tendency to do more harm than good.

2. Radium and roentgen rays would have less effect than immediate destruction, because of the long latent period before their reaction and destructive effect develop. The analogy of a chancre to an epithelioma is essentially unsound in this connection.

"WHEN IS GONORRHEA CURED?"

To the Editor:—In Queries and Minor Notes, Nov. 17, 1923, it is stated that "if repeated expert examinations of the seminal fluid fail to reveal gonococci, their absence from the entire tract is assured." Just what is meant by repeated "expert" examinations, and how would a smear of the seminal fluid be prepared on the slide? Would you use the wire loop or would you smear it on with the edge of another slide as one does in making a blood smear?

The subject of determining just when a patient with gonorrhea is to be discharged as cured has always been of interest to me, as I have often discharged patients who had perfectly clear urine and who had no discharge or morning drops and have stayed that way for a long period only to return later with a relapse. Would you consider the secretion obtained from massaging the prostate and seminal vesicles as sufficiently reliable for diagnosis as that obtained from emission under sexual excitement?

This, I am asking in view of your explanation that "during the sexual excitement with erection which precedes emission, there is active secretion emitted by all glands opening into the seminal tract, which secretion floats to the urethral surface their contents, filling the canal to overflowing. This fluid, together with that from the vesicles, constitutes the emitted semen." B. C. MARANTZ, M.D., New Haven, Conn.

ANSWER.—The failure to find gonococci in repeated examinations of the seminal fluid is good evidence that the genital tract is free from infection, but does not necessarily rule out the urethra, especially the urethral glands.

The best way to make smears of the seminal fluid is to pick up a little material with a platinum loop and make a thin film of it on a thoroughly clean slide, dry it, fix it, and stain it.

The secretion obtained from massage of the prostate gland and seminal vesicles should be repeatedly examined for gonococci in determining cure in a case of posterior gonorrhea. After repeated examinations of this kind in conjunction with provocative injections of silver nitrate, the examination of the ejaculated seminal fluid should always be made. By the latter method one obtains a more reliable specimen of the secretion of these glands, especially from the deep recesses of these organs, which cannot be obtained by massage.

NITRITOID REACTION

To the Editor:—I read occasionally in French medical journals of what the French call the nitritoid reaction, which apparently occurs in connection with the injection of arsphenamin. Will you kindly explain its nature and importance?

YERVANT KHATANESSIAN, M.D., Nahud, Egypt.

ANSWER.—The nitritoid reaction that sometimes follows the intravenous injection of arsphenamin consists of flushing of the face, rapid pulse and dyspnea. Nausea, vomiting and precordial pain may be present, and even syncope may occur. Edema of the lips and tongue, as well as congestion of the conjunctiva, have been noted. These symptoms usually occur while the drug is being injected, but may not appear until later, even the second or third day. They are due to vasodilatation, and for that reason are called nitritoid, from their resemblance to the effects of the administration of nitrites. They may be relieved by epinephrin, of which at least 0.5 mg. must be given intramuscularly the moment the symptoms appear. If relief is not obtained, the dose may be repeated at short intervals and even increased until facial pallor is produced.

CRAMPS IN THE LEGS AND FEET

To the Editor:—What is the cause of night cramps in the legs and feet, and what is best to do for these? F. J. Q., M.D., New York.

ANSWER.—The causes of cramps in the legs and feet are numerous. Often cramps are brought about by overuse of the muscles during the day, as by standing for long hours, taking an unusual amount of exercise, or the wearing of shoes that do not fit well or have heels that are too high or too low. Defective shoes cause the muscles to carry a load that should be borne mainly by the bones and ligaments. Cramps may also be caused by some defect in the circulation of the blood in the limbs, such as obstruction by tight garters, varicose veins, or even pressure on the iliac veins in the abdomen; they may be due to some general intoxication, and at times to an arteriosclerosis; more rarely they are due to a disease of the nervous system. The treatment must necessarily depend on the cause, but most often will be of orthopedic nature.

TREATMENT OF CONGENITAL CATARACT

To the Editor:—A patient of mine who has a congenital cataract has been receiving treatment from a physician for about a year. This treatment is the so-called negative galvanic electric absorption treatment. In your opinion, what merit, if any, does this treatment have? In view of the fact that at the end of one year practically all of the cataract still remains, is it advisable to continue this treatment?

GEORGE S. REISS, M.D., Long Beach, N. Y.

ANSWER.—In certain types of congenital cataract, the opacity is so small as to cause no interference with vision, which may be defective for other reasons. In this type, no surgical or medical treatment is indicated. When the opacity is so large as to interfere with vision, the cataract should be removed early so that vision will not deteriorate from disuse of the eye. The earlier the operation is performed in congenital or juvenile cataract, the better will be the result. In only a small proportion of cases has a good result been obtained by negative galvanic current or other nonsurgical means. If the cataract in this case is large enough to interfere with the vision, operation should be done to prevent loss of function of the retina. It is probably best not to operate before the second year, and the patient should, of course, be in good health.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

CALIFORNIA: Los Angeles, February 18-20. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

NATIONAL BOARD OF MEDICAL EXAMINERS: Written Examinations in Class A Medical Schools. Part 1, February 13-15, 1924. Secretary, J. S. Rodman, 1310 Medical Arts Bldg., Philadelphia. Application for this examination must be made on or before January 15, 1924.

NEW YORK: Albany, Buffalo, New York and Syracuse, January 28-31. Ass't, Mr. Herbert J. Hamilton, State Education Bldg., Albany.

PENNSYLVANIA: Philadelphia, January 29-February 2. Prelim. Exam., Mr. C. D. Koch, 422 Perry Bldg., Philadelphia.

SOUTH DAKOTA: Pierre, January 15. Dir., Dr. H. R. Kenaston, Bonesteel.

VERMONT: Burlington, February 12. Sec., Dr. W. Scott Nay, Underhill.

HOSPITAL SERVICE IN THE UNITED STATES

This Hospital number contains statistics regarding hospitals, sanatoriums and related institutions in the United States. The figures are based on reports from superintendents, directors or other executives of the hospitals, or, in the case of the government hospitals, from the officials who are in a position to give the facts. The figures, therefore, should be reliable.

TOTAL SUPPLY OF HOSPITALS

There are now 6,830 hospitals in the United States, as compared with 6,152 in 1920, an increase of 678. The total bed capacity is 755,722. In 1920, the total bed capacity was 817,020. These figures, however, included 110,646 beds in homes which later were found to be other than hospital beds and which, therefore, have been omitted from the present statistics. Eliminating these figures from the returns for 1920 gives a total bed capacity for that year of 706,374. Instead of a reduction in the number of hospital beds, therefore, there has really been an increase of 49,348. Now the average number of beds in all hospitals which are occupied by patients is 553,133—statistics which were not obtained in 1920.

The increase in the number of hospitals since 1906 is shown in Chart I on page 118. The increase has been from 2,411 in 1906 to 6,063[1] in 1923, an increase of 3,652. It is interesting to note that the largest increase since 1906 has been in the number of hospitals of twenty-five beds and less, the increase being from 854 in 1906 to 2,173 in 1923. The largest increase since 1918, 304, was in the number of hospitals having from twenty-six to fifty beds each.

AGENCIES MAINTAINING HOSPITALS

Statistics this year show the hospitals maintained by governmental agencies, federal, state, county and city, as compared with nongovernmental agencies, such as churches, fraternal orders and partnerships. The governmental hospitals are largely custodial in character, and include 62.4 per cent. of the entire hospital bed capacity in the United States. A higher percentage of the beds also are in constant use, the percentage used being 79.4, as compared with 62.9 per cent. of the beds in nongovernmental hospitals. This is due, doubtless, to the fact that the turnover of patients in governmental hospitals is much less frequent than in the nongovernmental institutions.

TYPES OF HOSPITALS

Of the 6,830 hospitals, 5,005, or 73.3 per cent., are general hospitals, and 1,825, or 26.7 per cent., are special hospitals. The extent to which specialization in medicine is increasing is reflected not only in the increasing number of special hospitals but, to a larger degree, in the numerous special services now being provided in general hospitals. Special hospitals are almost invariably found in populous centers, while remote regions are necessarily served by general hospitals, or those which admit all types of patients.

1. This is the number of actual hospitals, and does not include the hospital departments of 767 "homes" which care mainly for well people.

LABORATORIES AND NURSE TRAINING SCHOOLS

Statistics are presented this year showing the numbers of hospitals reporting laboratories, roentgen-ray departments and nurse training schools. Of the 6,830 hospitals, only 3,035, or 44.4 per cent., report that they have laboratories; 2,841, or 41.5 per cent., report that they have roentgen-ray departments, and 1,964, or 28.8 per cent., report nurse training schools. These figures will be valuable for comparative purposes in later presentations of hospital data.

DEMAND AND SUPPLY OF INTERNS

Special tabulations are given in regard to the present inadequate supply of interns. Only 940 hospitals report that they have or desire to have interns; the total demand for interns is 4,656, but only 4,021 have been obtained. It is believed, however, that a larger number of hospitals would make use of interns if it were at all possible to obtain them. This is apparent from the fact that 1,544 hospitals report 3,912 resident physicians, some of these being hospitals which also reported interns. The total number of interns and residents is 7,933, which more nearly represents, but probably exceeds, the demand for such services as interns could render. Of the 4,021 interns reported, it appears that many of them were not recent graduates—of which there were only 3,120 in 1923—but interns continuing to serve for two or three years, or practicing physicians who have accepted internships for the purpose of review or for additional experience. It is evident, therefore, that the demand for interns hereafter cannot be entirely supplied by recent graduates, since such large numbers of graduates are not essential to keep the country adequately supplied with physicians. It is believed that the shortage of interns has passed the acute stage, however, since an increased use is being made of resident physicians, who now number 3,912, and some hospitals are lengthening their internships to two or more years. The increased enrolments in medical schools will help to relieve the situation, since present enrolments indicate that there will be about 3,800 graduates in 1924, and about 4,200 in 1925. A further investigation of the demand and supply of interns is now under way in an attempt to determine the advisability of providing trained hospital assistants who will perform part of the duties at present devolving on interns.

THE PROBLEM OF SECURING INTERNS

It is quite well shown in the statistics that the appeal for interns must be made on the basis of educational opportunities offered rather than that of financial remuneration There is no objection to giving interns some financial return, and even a small stipend means much to the average graduate The hospitals which most easily secure interns and which have waiting lists, however, are the ones which are known to furnish the best educational opportunities, whether they provide salaries or not. Ten state licensing boards are requiring the internship as a prerequisite to licensure, and eleven medical colleges require it before granting the M.D. degree. Regardless of any requirements, however, approximately four fifths of the medical graduates voluntarily obtain internships because of their educational value, whether or not there is remuneration.

SALARIES PAID TO INTERNS BY APPROVED HOSPITALS

A canvass of the salaries paid in the 660 hospitals approved for intern training (see table, p. 150) shows that of the 3,717 interns serving in these hospitals during the year ending July 1, 1923, no salary at all was received by 1,863 interns; and 1,782 received some money compensation either as salary, fees, or a bonus. A group of 171 hospitals which were using 1,040 interns paid $25 a month or less, and a group of 174 hospitals using 575 interns paid more than $25 per month. These figures show that graduates are serving internships not so much for the money as for the additional training and experience which better fits them for the practice of medicine. In the 510 general hospitals that furnish acceptable internships, 195 paid no salary at all; 151 paid $25 or less, and only 121 paid more than $25 even if we include in this

number the 8 that allow a bonus or fees. Contrasted with these figures are the hospitals that are approved for special internships, in which the majority of salaries range much higher; nevertheless, it is in the special hospitals that the highest shortage of interns is found. While it is clear that the chief motive of interns is educational and not pecuniary, letters from many ex-interns state that a salary or money allowance of some kind, even though small, is sincerely appreciated by the majority of medical graduates just out of college.

on the attending staff and the management of the hospital for allowing patients to be treated by unsupervised physicians who are known to be inexperienced. In such a hospital the intern does not receive a fair return for his services, and his time may be more than wasted.

THE EDUCATIONAL PROBLEM

The intern problem from the educational standpoint has varied considerably during the last three decades. At first the value of internships to medical students was not widely appreciated because so very few hospitals recognized their educational function. Their value was soon recognized, however, by the interns who served in these hospitals, the word regarding this value was rapidly disseminated, and, during more recent years, such internships have been eagerly sought after. In fact, students soon became willing to accept internships in almost any hospital that would admit them. It was recognized that in a hospital with a fair variety of patients, in a year or eighteen months, the intern had a greater opportunity to apply his medical knowledge in the examination and treatment of patients than he could obtain in several years of general practice. He then began private practice with greater confidence and with fewer chances of making some serious error, which would be disastrous to his future medical career. Through the intern service, in fact, while still under supervision, he had gained the essential experience and skill without endangering the lives of the patients who were under his supervised care.

Salaries of Interns in Approved Hospitals, 1923.

	No Salary		Fees Only		Bonus Only		Salary Amount Not Given		$25 per Month or Less		$26 to $50 per Month		$51 to $100 per Month		Over $100 per Month		No Information as to Salary		Totals	
	Number of Hospitals	Number of Interns	Number of Hospitals	Number of Interns	Number of Hospitals	Number of Interns	Number of Hospitals	Number of Interns	Number of Hospitals	Number of Interns	Number of Hospitals	Number of Interns	Number of Hospitals	Number of Interns	Number of Hospitals	Number of Interns	Number of Hospitals	Number of Interns	Number of Hospitals	Number of Interns
General hospitals	196	1,660	3	10	5	24	23	78	151	907	96	323	15	44	2	27	20	52	510	3,125
Nervous and mental	2	2	..	..	..	..	4	4	1	1	8	23	13	22	..	..	2	5	30	57
Other special hospitals	44	201	2	14	1	8	5	29	19	132	26	107	11	26	3	3	9	15	120	535
Totals	241	1,863	5	24	6	32	32	111	171	1,040	130	453	39	92	5	30	31	72	660	3,717

THE INTERN PROBLEM

From the Standpoint of Medical Education *

N. P. COLWELL, M.D.
Secretary of the Council on Medical Education and Hospitals of the American Medical Association
CHICAGO

The only legitimate purpose of the hospital internship is educational. If this purpose is fully recognized and carried out by the hospital, the internship is of benefit to all concerned, depending directly on the extent to which this educational function is fulfilled. If it is not so recognized and carried out, the internship is a counterfeit, it bears a misleading label, and it is an actual menace to the patient.

A provision for the satisfactory training of interns draws into the hospital a constant stream of enthusiastic younger physicians whose minds are filled with the later methods of examination, diagnosis and treatment which they have learned in the medical schools. The many helpful suggestions that may be obtained from the interns by the members of the attending staff may be even more than a fair return for the supervision and direction of the interns' work. The interns are given an opportunity to begin active practice in the hospital where they come in contact with, and help care for, a large number and variety of patients so that the usual—and expected—errors of judgment or action may not only be promptly corrected and their repetition prevented, but also become of positive educational value. Through well conducted intern training, the hospital is pervaded by an educational or research atmosphere which keeps it active, progressive and up to date.

Where the educational function is not recognized and, therefore, not carried out, the reverse of these conditions prevails. Like the proverbial "gold brick," the form and appearance are there but the value is lacking, and the intern may be hindered rather than helped. Instead of obtaining further instruction and direction in his clinical work, he may, indeed, develop erroneous ideas and loose methods in his practice. Without supervision, instead of being corrected, his errors may be repeated indefinitely and, possibly, with disastrous results to the patient. The blame under such circumstances, although usually placed on the intern, more properly falls

SUPPLY OF HOSPITALS

Another early problem was that many hospitals would not accept interns under any circumstances, and of those which did, comparatively few provided internships of any real educational value. An investigation made in 1913 showed that, of about 2,500 general hospitals only 850 were in any way making use of interns, and of these, as shown by later investigations, only 314 could be approved for intern training. Many of the internships extended over eighteen months or two years, so that the 850 hospitals provided only about 2,000 internships each year for the 4,000 or more medical graduates. At that time, therefore, the requirement of a year of intern training as an essential for either the degree or the license was out of the question, and the majority of medical graduates entered at once on general practice. Considering the inferior training that was being provided twenty years ago by the majority of the medical schools, one can now appreciate how serious such practice was from the patients' standpoint. The surprising thing is that, under the circumstances, there have been so few really serious results. The rapid improvement in medical education, and particularly the greater opportunities and attention given to clinical instruction in medical schools, not only diminished the danger of error on the part of the recent graduate, but also made his services as an intern of greater value to the hospital. With the

* Read before the American Hospital Association, Milwaukee, Oct. 29, 1923.

advances in medical education, therefore, there has been a corresponding increase in the number of hospitals seeking interns, so that the demand now greatly exceeds the supply. At the present time 940 hospitals report that they have 4,021 interns, and 1,544 hospitals report that they have 3,912 resident physicians, many of whom have been more or less permanently employed to serve in lieu of interns. This makes a total of 7,933 serving as interns and resident physicians. Even this number, it is believed, still falls short of the total demand.

INTERN'S OPPORTUNITY FOR CHOICE

With the increased demand for intern service, the position of the recent graduate has been changed. Where formerly he had to accept the best he could get, he is now in a position to choose the one in which he believes a more satisfactory training can be obtained.

The increased demand also has made it possible to establish lists of hospitals which provide for intern training, including those which are reported to provide internships of high educational value and others which on investigation were found to be meeting certain requirements in their provision for intern training. The effect of established standards is

Hospitals Approved for Intern Training by the Council on Medical Education and Hospitals of the American Medical Association

	1914	1916	1920	1921	1923
SECTION I—GENERAL HOSPITALS					
Hospitals	508	519	469	482	510
Beds	88,000	92,464	103,997	106,868	121,740
Internships ...	2,667	2,737	2,960	2,962	3,119
SECTION II—NERVOUS AND MENTAL HOSPITALS					
Hospitals	35	57	25	26	30
Beds	53,688	85,654	41,722	43,944	49,830
Internships ...	220	303	72	88	57
SECTION III—OTHER SPECIAL HOSPITALS					
Hospitals	60	111	99	102	119
Beds	8,495	20,187	14,135	15,990	17,279
Internships ...	208	328	388	420	514
TOTALS					
Hospitals	603	687	593	610	659
Beds	150,183	198,305	159,854	166,802	188,849
Internships ...	3,095	3,368	3,420	3,470	3,690

seen in the reduced number of hospitals in the list of those approved for intern training. In 1913, 2,424 hospitals were listed and, of these, 852 reported a total of 3,006 interns. In 1914, a list of these was referred to prominent physicians or medical educators in the various states for revision, and the number approved was reduced to 603. As the investigation proceeded, other institutions were added until in 1916 there were 687. A schedule of requirements was established in 1919, on the basis of which, in 1920, the list was revised and the number of those approved was reduced to 593. Since then other hospitals have been gradually added until now (1923) the list includes 659 hospitals. Of the original 852 hospitals, now only 314 are on the approved list, 345 others having been added. Instead of the 3,006 internships of uncertain value which were listed in 1913, there are now 3,690 in hospitals which on investigation are believed to be in a position to furnish a fairly acceptable training for interns. These facts show that conditions in hospitals for the training of interns have been tremendously improved, which means also better staff organizations, better laboratory equipment, better histories of patients, better records, more clinical conferences, better supervision of the intern's work and—last but not least—a far better care of the patients.

For the last three years, instead of a lack of opportunity for graduates to secure internships, the tables are turned, and all one hears of is a lack of graduates to fill the places in the hospitals. The situation became particularly acute in 1922, when there were only 2,529 graduates—an unusually small number, due to the small enrolment in 1918 because of the war.

Some relief is in sight, since larger numbers of students have been enrolled in medical schools each year since the conclusion of the World War, and, as a result, the numbers of medical graduates will be larger, at least during the next few years. This year (1923) there were 3,120 graduates, while in 1924 the number will be approximately 3,700, and in 1925 about 4,500. The demand for internships is also increasing, but, evidently, the increase is not so rapid.

LENGTHEN THE INTERN SERVICE

Another aid in solving the problem of intern supply would be to lengthen the intern service to eighteen or twenty-four months. Many hospitals required the longer service until the supply of interns became so limited. Some that are giving a valuable intern training still hold to the prolonged service and are having no trouble to secure interns. In some of the larger hospitals, also, which require only a year, the interns frequently prolong their service voluntarily. By thus extending the intern service, a smaller number of interns *each year* will be required by these hospitals and the situation will be correspondingly relieved.

RESIDENT PHYSICIANS AND SURGEONS

Still another aid in solving the problem of intern supply rests in an extension of the intern training to provide graduate medical instruction for resident physicians and others. Some hospitals even today, from their staff of interns, select those who show special merit to continue in the hospital as resident physicians and surgeons. This type of training might be further developed, particularly in some of the larger general hospitals, by admitting to their intern service only those who have already served a rotating internship in some other hospital. This would be especially advantageous in special hospitals such as those for diseases of the eye, ear, nose and throat or other clinical specialties. Such a requirement by the special hospitals and the larger general hospitals would considerably relieve the situation, so that the numbers graduating from medical schools each year will more nearly supply the demand for interns. These residencies or higher internships might, with advantage to the hospital, be further developed into valuable graduate courses in the specialties by requiring review courses in the medical sciences, courses in technic, and certain research work preliminary to or along with the clinical work as second and first assistant in the special department.

HOSPITALS AS EDUCATIONAL CENTERS

It may be safely predicted that, as time goes on, hospitals will be considered less and less as progressive or safe institutions in which to treat the sick unless they are also distinctly educational institutions. Their excellence in respect to any particular function will depend directly on the extent to which they fulfil all their other functions. Already most hospitals are engaged in the education of nurses; many have interns, and a smaller number provide teaching facilities for medical students. An increasing number are now providing graduate teaching facilities for general practitioners as well as special residencies for those who are preparing themselves for the practice of specialties. The hospitals may, to a still larger extent, become educational centers where the physicians of the community or county may meet for clinical conferences or special clinics. Any or all of these various forms of instruction are bound to react in an improved knowledge and skill on the part of the attending staffs of the hospitals. Many of the hospitals, also, are even now performing an additional service in the education of their patients in matters

pertaining to personal health and hygienic living, while others, through their social service departments, are carrying health instruction to the homes of those who have previously been patients in either the hospital or its outpatient department. No institution should be so self-centered that it cannot absorb the new ideas or methods which it might readily obtain from the great outside.

As there has been great progress in both general and medical education, as an increasing knowledge in regard to the etiology, diagnosis and treatment of diseases is being placed at the disposal of physicians, so also—it is safe to predict—there will be a great development educationally in the hospitals of this country within a comparatively few years. While the training of nurses and interns constitutes only a small portion of the great service ultimately to be rendered, these perhaps constitute the entering wedge after which other educational measures will rapidly follow. The hospitals will then be in a position to render a much greater service to the public in their respective communities.

DESIRABLE CONDITIONS FOR THE TRAINING OF INTERNS

The conditions in general hospitals which make them desirable to recent graduates seeking intern training are as follows:

1. The hospitals should be large enough to provide:

(*a*) A fairly large supply of patients, with both acute and chronic diseases, representing all the common diseases in medicine, surgery and obstetrics, as well as a fair number of patients in each of the clinical specialties.

(*b*) A rotating service in which the intern will render services in the departments of medicine, surgery and obstetrics and perhaps also in the laboratory. Sometimes the third service is in the specialties including obstetrics.

(*c*) In some of the larger hospitals the services are graded and progressive, each serving as junior and senior, or in still larger hospitals, as second junior, first junior, second senior and first senior. Some hospitals have the services so arranged, also, that the terms of service expire at different times of the year. In this way there is always a certain number of experienced interns. Another advantage is that the senior interns can help a great deal in the supervision of the work of the junior interns. This is of benefit to both intern and patient.

2. The hospital should be liberally equipped with:

(*a*) A serviceable laboratory wherein examinations can be made of urine and blood as well as histologic examinations, and the more delicate laboratory tests, such as the Wassermann, basal metabolism and blood chemistry.

(*b*) A satisfactory roentgen-ray laboratory, sufficiently well equipped for both diagnostic and therapeutic work, in which the intern can not only learn the technic but also become skilled in the interpretation of roentgenograms.

Both these laboratories should function actively with expert supervisors in charge. A competent pathologist, who has had a complete training in medicine, should be in charge of the clinical laboratory and should also make the postmortem examinations, which should be attended by the interns. These postmortems, especially when they are a part of the so-called clinical pathologic conferences, constitute one of the best educational factors in the intern's training. The extent to which necropsies are made of service in the hospital is usually indicated by a high percentage of necropsies as compared with deaths occurring in the hospital. The pathologic conferences are usually of greater interest and educational value if they are attended by both staff members and interns.

3. Of most importance to the intern, however, is an attending staff of physicians who are individually interested in the education and welfare of the interns and who will give them the opportunity to write histories and examine patients and prevent their time being wasted in duties belonging more to orderlies and nurses. The closer the sympathy and fellowship between the members of the staff and the interns, the more benefit there will be to all parties concerned—the staff, the interns, the patients. Staff members who hold conferences with interns soon find how many valuable suggestions and hints they personally receive from the interns themselves. Indeed, the intern brings into the hospital suggestions of newer methods and more recent ideas, which he gives in exchange for opportunities to develop skill in history writing, in physicial diagnosis and in the clinical observation and care of patients.

In some hospitals where advanced internships are provided, or where graduate medical students are admitted, there is a danger that the intern's training may be lost sight of. In such hospitals a special committee should be established, or some routine arrangement made to provide for the intern's education.

Book Notices

THE EVOLUTION AND SIGNIFICANCE OF THE MODERN PUBLIC HEALTH CAMPAIGN. By C.-E. A. Winslow, Dr.P.H., Professor of Public Health, Yale School of Medicine. Cloth. Price, $1.50. Pp. 65. New Haven: Yale University Press, 1923.

This little essay is a brief survey of public health development with an eye always on the status and significance of present achievement. The style is clear and interesting, and at times rises to eloquence. The origins of the public health movement have probably never been better set forth in a concise form. Even in these busy days this book is well worth reading.

PUBLIC HEALTH IN THE UNITED STATES. An Outline with Statistical Data. By Harry H. Moore. With an Introduction by Haven Emerson. Cloth. Price, $4. Pp. 557, with 75 illustrations. New York: Harper & Brothers, 1923.

In this book, the author has collected a large amount of reference material on public health. He begins with a historical review of the subject, the eight pages of which are far too brief to permit an adequate perspective on man's everlasting attempt to gain long life. The second chapter is an analysis of mortality statistics well illustrated with charts and diagrams; the third concerns morbidity rates; the fourth, defects and minor ailments; the fifth, the economic costs of disease. The material presented is taken from current medical literature, and the statistics are, in general, reliable. The chapter entitled "Conquests of Science" supplies some of the historical data, which might well have been included in the earlier chapter. Among the unconquered enemies, he includes pa ·ularly tuberculosis, venereal diseases, children's diseases, mental diseases, cancer, malaria, hookworm disease and industrial diseases.

The chapter headed "Enemies Not Yet Attacked" includes pneumonia, diseases of the heart and kidneys, drug addiction, pellagra, diabetes, hay-fever and asthma, and constipation. It is quite clear that the author has been guided largely by the statistics and studies of the Life Extension Institute and the Metropolitan Life Insurance Company. Certainly, all of these diseases have been attacked; and for some of them, the results have been extremely promising. So far as constipation is concerned, the methods of prevention and cure are well understood. The fault lies with human nature, particularly American human nature. The problem is the correction of fundamental characteristics in the American mental type.

A special section is devoted to nostrums and quackery. As in the other chapters, the treatment is largely "touch and go," since it is obviously impossible in the space available in a small volume to handle largely any single phase of this extensive subject. The result is a loss of the sense of proportion in assigning to any single subject its relative value in the great field. In a chapter entitled "Health Activities More or Less Misdirected," special attention is called to

health magazines promoting peculiar fads, and to such subjects as osteopathy, chiropractic and Christian science.

The author cites four measures which would aid in bringing about reform:

1. Medical students should be encouraged to familiarize themselves with the utilization of manipulative methods when, in the case of certain disorders, they promise to be beneficial.
2. Psychotherapy should be taught in medical colleges.
3. State and federal laws dealing with nostrums and quackery should be strengthened and be more vigorously enforced, and new laws passed when needed.
4. The people must be educated regarding the fraudulent and harmful nature of the multitudinous appliances, schemes, programs of treatment and nostrums which are now extensively advertised.

The next section of the book deals with conquest of disease by health, in which brief paragraphs are accorded to each of the organizations concerned in health activities. Special chapters discuss the activities in schools, organized recreations, dispensaries, clinics and health service in industry. The book concludes with a section devoted largely to economic and sociological questions.

The author feels that the trend of medicine is definitely toward socialization of both preventive and curative medicine. The book is suplemented by valuable state tables and bibliographic notes on all of the subjects it discusses.

If any criticism is to be made of this book as a whole, it would be in the fact that the author has unquestionably been influenced in his work by a group in the public health field who are definitely committed to the socialized tendency. This accounts for an unevenness of presentation and a rather biased attitude as to the place to be occupied by the individual physician in the field of public health work.

THÉORIE COLLOÏDALE DE LA BIOLOGIE & DE LÀ PATHOLOGIE. Par Auguste Lumière, Correspondant national de l'Académie de médicine. Paper. Price, 16 francs. Pp. 203, with 25 illustrations. Paris: Etienne Chiron, 1922.

This is a highly speculative but interesting discussion developing the theme that the colloidal state is the essential condition of life and that flocculation of the colloids determines disease and death. The impossibility of either proving or disproving many of the statements in such speculative discourses makes them delightful to the authors but not convincing to the readers. Much is made of the phenomena of anaphylaxis, which are believed by the author to be responsible for many if not most of all human ills, and to depend on alteration in the state of the colloids of the blood and tissues. These ideas may be correct, but the evidence presented takes into account only a fragment of what is known of the subject, disregarding the great mass of evidence that anaphylaxis is not so much humoral as intracellular. The author's own experiments, on which he bases a particular theory, fail to take into account the well known facts relative to the production of anaphylactoid phenomena following intravascular injection of particulate foreign matter, and hence have not the broad significance he would ascribe to them. Some of the ideas are highly fantastic, as, for example, that diabetes is the result of irritation of the capillary walls in the diabetic center by flocculated colloids in the circulating blood.

BERGEY'S MANUAL OF DETERMINATIVE BACTERIOLOGY. A Key for the Identification of Organisms of the Class Schizomycetes. Arranged by a Committee of the Society of American Bacteriologists. David H. Bergey, Chairman, Francis C. Harrison, Robert S. Breed, Bernard W. Hammer, Frank M. Huntoon. Cloth. Price, $5.50 net. Pp. 442. Baltimore: Williams and Wilkins Company, 1923.

This book, which is in part the work of a committee of the Society of American Bacteriologists, is modeled, to some extent, on Chester's "Determinative Bacteriology," published in 1901 and now long out of date. One of the main features of this new work is the adoption of an elaborate system of classification of bacteria into families, tribes and genera, made also by a committee of the Society of American Bacteriologists. While some of the new nomenclature has come into use and is more or less familiar, such as the generic name *Clostridium* for some of the anaerobic bacilli, the ordinary working bacteriologist will be greatly bewildered by the mass of new generic names appearing in the book. Many of the changes are so radical that they are hardly likely to survive. One finds, for example, the organism ordinarily known as *B. coli* under the generic name of "Escherichia," the typhoid bacillus under the name "Eberthella," the paratyphoid bacilli in the genus "Salmonella" and *Bacillus alcaligines* in the genus "Alcaligines." The use of eponyms is to be deplored on general principles. The most confusing feature of the book is the absence of any cross reference in the index to the names by which bacteria are ordinarily called in current class room and laboratory practice. Without these, a student or research worker will find difficulty in discovering the description of any particular organism in which he is interested. This is a serious oversight, and should be remedied in the next edition. The extent to which the descriptions of the various "species" are accurate can be determined only by practical use of manual.

EXERCISE FOR HEALTH AND CORRECTION. By Frank D. Dickson, M.D., and Rex. L. Diveley, M.D. Cloth. Price, $2. Pp. 127, with illustrations. Philadelphia: J. B. Lippincott Company, 1923.

In these busy days pictures in lieu of text as a method of information make a strong appeal. A new popular magazine undertakes to keep us abreast of the new things in science and invention by pictures alone.

This book gives useful instruction in physical exercises, mainly by illustrations which are reproductions of photographs. They are designed, says the preface, "to give to those interested in the building up of their bodies a brief but fairly complete and systematic manual of exercise." But, "exercises used in the treatment of scoliosis, or curvature of the spine have been purposely omitted. It is felt that such exercises can only be successfully used under the direct supervision of a trained instructor."

The pictures are accompanied by very brief statements of the manner in which the exercises are to be performed, but the pictures themselves indicate very clearly the procedure to be followed. They are arranged in five groups: The first two groups are designed to tone up the muscles of the body as a whole and improve the general health. Under this heading there are first, bed exercises, setting up exercises. The three remaining groups are intended for use in special conditions which may be favorably influenced by muscle training. They include postural exercises in a recumbent position, postural exercises standing, and foot exercises. The book furnishes a reliable and satisfactory guide to a number of useful gymnastic exercises.

RIBBERTS LEHRBUCH DER ALLGEMEINEN PATHOLOGIE UND DER PATHOLOGISCHEN ANATOMIE. Herausgegeben von J. G. Mönckeberg, ordentlichem Professor der allgemeinen Pathologie und der pathologischen Anatomie. Ninth edition. Paper. Price, $4.80. Pp. 831, with 852 illustrations. Leipzig: F. C. W. Vogel, 1923.

This is one of the standard German textbooks on pathologic anatomy, which has exhausted its eighth edition in a few months and now appears in a little altered ninth edition. For the student it has the advantage of covering the chief topics of both general and special pathology in a single, compact volume, a conciseness which means that it is entirely inadequate to serve as a reference book for the graduated physician, especially as no bibliography is provided. Like all condensed works of the sort, the material discussed is limited to the certain and obvious, the result being an accurate but uninspiring presentation. The consideration of pathogenesis and functional pathology is decidedly deficient. There are numerous and well chosen illustrations, mostly of simple black and white sketches, which are of more educational than artistic value. It can be recommended as a thoroughly reliable, but not exceptional or unusual, textbook for students of pathologic anatomy.

THE HYGIENE OF MARRIAGE. By Isabel Emslie Hutton, M.D. Foreword by Professor A. Louise McIlroy, M.D., D.Sc., O.B.E. Cloth. Price, 6 shillings net. Pp. 112. London: William Heinemann, 1923.

This small book, published in England, is a practical work on the subject it discusses. It is written in plain, understandable language with a modern point of view, and the author has certainly been guided by good judgment as to what constitutes general medical opinion. The book contains a complete chapter on birth control, discussing contraceptive methods in a rational manner.

Medicolegal

Death from Lack of Medical Treatment No Defense Against Charge of Homicide

(Embrey v. State (Texas), 251 S. W. R. 1062. Mason v. State (Texas), 251 S. W. R. 1065)

The Court of Criminal Appeals of Texas, in affirming a judgment of conviction of defendant Embrey of murder, says that the man killed was stabbed in the stomach, the stabbing having occurred at a church about a mile from town. Complaint was made of a refusal of the trial court to instruct the jury that if the man's death was due to a lack of proper medical treatment, and that death would not have resulted from the wound sustained by him if he had received competent medical aid within a reasonable time thereafter, the offense should be reduced to an aggravated assault. But that the injury inflicted by the defendant caused the death of the man seemed not open to question, and the mere fact that a surgeon was not at hand to render immediate aid could not be regarded as a supervening cause. The physician who reached the scene of the difficulty after the man had died testified that the man had bled to death. Whether he died in forty-five minutes or in an hour and a half after he was cut by the defendant would not affect the fact that the defendant cut him with a knife and, from the direct effect of said cut, his death resulted. This court has held in many cases that, even though the deceased was already suffering from a disease or other wound, if the act of the accused hastened death, the latter might be held criminally responsible. It is also the rule that, if a wound cause a disease which produces death, the death is imputable to the wound. Furthermore, the trial court is not required to instruct the jury on improper treatment as affecting death unless there is evidence to support the theory of such treatment affecting it, even though the physicians say the wound was not necessarily fatal.

The same court says, in the Mason case, that one who intentionally inflicts a wound on another with a deadly weapon, from the effects of which wound death results without any intervening cause, would be guilty of some grade of culpable homicide. That the wound was not necessarily fatal and that there was a showing in this case that the wounded person died from loss of blood, which might have been prevented if medical aid had been promptly obtained, did not alter this court's conclusion that the evidence supported a conviction of manslaughter. Moreover, the court mentions that no effort on the part of the defendant was shown to have been made to procure medical aid, or in any way to prevent the consequences of the wound apparently inflicted by her with a deadly weapon (a knife) and with the intent to injure.

What Is Law for the Man Is Also Law for the Woman

(Oppenheim v. Kridel (N. Y.), 140 N. E. R. 227)

The Court of Appeals of New York says that the question presented by this appeal was, Can a wife maintain an action for criminal conversation, as well as a husband? At common law the wife had no cause of action against a woman for alienating the affections of her husband or for the act of adultery committed with him known by the technical name of an action for criminal conversation. The husband could bring such an action against a man for enticing away the affections of the wife, or for committing adultery with her. Some of the reasons assigned as the basis of the action by the husband for criminal conversation sound somewhat strange in our ears today. The gist of the action was the possibility that by the infidelity of a wife the husband might be called on to support illegitimate children, or the legitimacy of his own offspring be cast into doubt. The husband, so it was said, had a property in the body, and a right to the personal enjoyment, of his wife, for the invasion of which right the law permitted him to sue as husband. The wrongful act was treated as an actual trespass on the marital rights of the husband, although the consequent injury to him was on account of the corruption of the body and mind of the wife. But, barring the fictions which apply only to procedure, whatever reasons there were for giving the husband at common law the right to maintain an action for adultery committed with his wife exist today in behalf of the woman for a like illegal act committed with her husband. If he had feelings and honor which were hurt by such improper conduct, who will say today that she has not the same, perhaps even a keener, sense of the wrong done to her and to the home? If he considered it a defilement of the marriage bed, why should not she view it in the same light? The statements that he had a property interest in her body and a right to the personal enjoyment of his wife are archaic, unless used in a refined sense worthy of the times, and giving to the wife the same interest in her husband. The danger of doubt being thrown on the legitimacy of the children, which seems to be the principal reason assigned in all the authorities for the protection of the husband and the maintenance of the action by him, may be offset by the interest which the wife has in the bodily and mental health of her children when they are legitimate. Science today teaches us the dire consequences which sometimes follow promiscuous intercourse by a man. It is common knowledge that the sins of the father are sometimes visited, not only on the children, but on the wife, in the resulting diseases contracted through breaches of the marriage contract. The husband must not have discredit thrown on the legitimacy of his children. The wife should have no doubt about the health and cleanliness of her husband or of her offspring. Legitimacy is important. Children of sound mind and body are equally important. wherefore the court concludes that there is no sound and legitimate reason for denying a cause of action for criminal conversation to the wife while giving it to the husband. In other words, it holds that what is law for the man is also law for the woman, and grants a new trial after a judgment recovered by the plaintiff had been reversed by the appellate division, which at the same time directed the dismissal of the complaint.

Questions and Cross-Examination for One Not Alienist

(Lewis et al. v. American Security & Trust Co. (D. C.), 289 Fed. R. 916)

The Court of Appeals of the District of Columbia, in affirming a decree admitting a will to probate, says that a physician testified that he had known the testator well and that in his opinion the latter was of sound mind. The physician was then asked whether, from his medical training and experience, he was able to tell from the appearance of persons, as they grew old, when they were breaking down physically or mentally. This was objected to on the ground that it did not appear that the witness was an alienist. Thereupon the witness said he was not an alienist, and counsel who asked the question stated that it was not contended that the witness was an alienist. The trial court then overruled the objection, and the witness answered the question by saying that he came in contact with people that he had seen year after year, and consequently could measure them from one year to the other; that it seemed to him that he could tell very well when their mental powers were beginning to lessen. On being asked whether he had observed any evidence, at any time during his acquaintance with the testator, of that breaking down mentally which sometimes accompanies advancing years, he answered, over an objection that was overruled, that he never noticed any change in him mentally at all. Thereupon opposing counsel propounded a hypothetic question, which was objected to on the ground that the witness had not testified as an alienist, and such objection was sustained. After that the witness was interrogated, without objection, as to his observation of patients having senile dementia and other similar ailments. The foregoing rulings were correct. The witness was not an alienist, stated that he was not, and his information was based on and limited to observation. The fact that he was a physician added weight to his testimony, but did not change its character.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

3: 599-690 (Nov.) 1923

Microscopic Diagnosis of Suspected Diphtheria Cultures. C. G. Bull and L. C. Havens, Baltimore.—p. 599.
*Carriers of Diphtheria Bacilli Among School Population of Baltimore. J. A. Doull and W. T. Fales, Baltimore.—p. 604.
*Studies on Bacillus Anthracis from Feces of Guinea-Pigs Fed with Anthrax Material. W. L. Holman and C. A. Fernish, Stanford, Calif.—p. 640.
Some Correlations Between Number of Ancylostomes Found, Number of Treatments Previously Given to Cure, and Age of Patient Treated. H. Muench.—p. 649.
Studies of Bird Malaria in Relation to Mechanism of Relapse. S. B. Harel, Baltimore.—p. 652.

Diphtheria Carriers Among School Children.—An examination made by Doull and Fales of combined nose and throat cultures from 7,790 children, selected at random from schools situated in the northeastern section of Baltimore during the period November, 1921, to June, 1922, resulted in the demonstration of 409 (5.25 per cent.) carriers of morphologic and 136 (1.75 per cent.) carriers of virulent diphtheria bacilli. The rate of carrier infection varied greatly at different seasons of the year. The incidence of carriers of virulent diphtheria organisms was 3.29 per cent. in November and December, 1.49 per cent. in February and March and 0.87 per cent. in May and June. This variation at different seasons in carrier incidence coincides with the seasonal variation observed in diphtheria morbidity. There is a remarkable constancy at the different seasons in the percentage of cultures containing morphologic diphtheria bacilli which on further test were found to be virulent. These percentages were 30.45, 29.59 and 26.09, respectively, in three surveys. The seasonal variations in carrier incidence was generally consistent in individual schools. The rate of carrier infection was not significantly different in the two sexes for the age period covered in this study. There was a slight but not significantly lower carrier rate among colored children than among white children. A slightly but consistently higher incidence of carrier infection was found in the younger than in the older children. Taking in consideration all the schools surveyed, definitely but not greatly higher rates were found among those children who had enlarged and diseased tonsils than among those with normal tonsils. There was no noticeable difference in carrier incidence between those having had their tonsils removed and those with normal throats. There was no significant difference in the incidence of carriers among children with a previous history of diphtheria and those with no such history.

Anthrax Bacilli in Feces.—The evidence deduced by Holman and Fernish from the experiments here reported is against the occurrence of intestinal anthrax. Food anthrax probably arises from portals of entry about the mouth. Guinea-pigs fed with large quantities of spores rarely become infected, but pass anthrax spores for many days. Edema, as an index of the portal of entry, is not reliable.

American Journal of Physiology, Baltimore

64: 445-669 (Nov.) 1923

Nature of Activities of Human Sweat Glands. E. F. Adolph, Pittsburgh.—p. 445.
*Studies of Brain Stem. VII. Respiratory Exchange and Heat Production After Destruction of Body Temperature-Regulating Centers of the Thalamus. F. T. Rogers and R. W. Lackey, Dallas, Tex.—p. 453.
Rabbit as Test Animal for Determining Potency of Insulin Preparations. H. D. Clough, R. S. Allen and E. W. Root, Jr., Rochester, N. Y.—p. 461.
Autonomic Control of Liver Functions. I. Action of Autonomomimetic Drugs, and of Vagal Stimulations on Fluid and Sugar Output from Hepatic Veins of Terrapin. C. D. Snyder, H.S. Wells and P. G. Culley, Baltimore.—p. 485.
Conditions Affecting Catalytic Action of Blood. I. Walling and O. O. Stoland, Rosedale, Kan.—p. 503.
Experimental Ablation of Superior Cervical Sympathetic Ganglia of Rabbit. F. P. Underhill and G. T. Pack, New Haven, Conn.—p. 519.
Influence of Various Diuretics on Concentration of Blood. F. P. Underhill and G. T. Pack, New Haven, Conn.—p. 520.
Nature of Delay in Response to Second of Two Stimuli in Nerve and Nerve-Muscle Preparation. A. Forbes, L. H. Ray and F. R. Griffith, Jr., Boston.—p. 553.
*Reflex Hyperglycemia: Carbohydrate Mobilization Effected by Afferent Crural, Sciatic and Vagus Stimulation. F. R. Griffith, Jr., Boston.—p. 618.
*Relationship of Suprarenals to Amount of Sugar in Blood. F. R. Griffith, Jr., Boston.—p. 659.

Relation of Thalamus to Heat Production.—Since activity of the striated musculature is a major source of heat production in the body; since increased activity of this musculature does not appear when the animal is exposed to atmospheric cold if the thalamus has been destroyed; and since determinations of basal metabolism indicate no disturbance of the heat producing chemical activities of the tissues whether the thalamus be present or not, it is suggested by Rogers and Lackey that when the thalamus has been destroyed, pathways of reflex discharge have been broken which, commonly stimulated by cold, lead to increased muscular activity and heat production.

Reflex Hyperglycemia.—The results reported by Griffith show that reflex vagus, crural or sciatic stimulation may cause an increase in the concentration of sugar in the blood. Operations, especially those within the abdomen (removal of suprarenals; dissection of hepatic nerves), cause hyperglycemia; but these disturbances of the blood sugar concentration constitute an abnormal response to other hyperglycemic procedures. Two experiments are recorded in which the blood sugar concentration was increased 18 and 17 per cent., respectively, by afferent sciatic stimulation, after denervation of the liver and suprarenals and while the animals were curarized and under uniform, continuous artificial respiration.

Relationship of Suprarenals to Sugar in Blood.—It is shown by Griffith that animals whose suprarenals have previously been immobilized (by removing one and denervating the other) have lower and more constant blood sugar values under the conditions of these experiments (after anesthetization, tying down, insertion of an artery cannula) than do animals that are normal in respect to suprarenal innervation. This, together with the evidence present previously, suggests that stimuli which might be too weak of themselves to cause a pronounced carbohydrate mobilization may be effective if they can have the sustaining cooperation of a reflexly stimulated adrenin discharge.

Annals of Clinical Medicine, Baltimore

2: 137-202 (Nov.) 1923

Quantitative Wassermann in Relation to Diagnosis and Treatment of Syphilis. W. W. Duke, Kansas City, Mo.—p. 137.
*Prophylaxis of Cardiovascular Diseases. N. P. Barnes, Washington, D. C.—p. 163.
*Four Cases of Malignant Disease of Lungs Presenting Gastric Symptoms at Onset. T. F. Leitz, Baltimore.
*Subdiaphragmatic Pain of Cardiac Origin. F. T. Billings, Pittsburgh.—p. 174.
*Carcinoma of Ependyma. L. M. Warfield, Ann Arbor, Mich.—p. 179.
*Relationship of Ion Content of Cell to Symptoms of Disease, with Special Reference to Calcium and Its Therapeutic Application. F. M. Pottenger, Monrovia, Calif.—p. 187.
Focal Infection in Clinical Medicine. J. Daland, Philadelphia.—p. 197.
Diseases of Lungs Studied with Roentgen Ray. G. E. Pfahler, Philadelphia.—p. 201.

Prophylaxis of Cardiovascular Disease.—Barnes emphasizes the fact that cardiovascular diseases are the greatest menace to the human race today and cause more deaths than tuberculosis and cancer. The profession and the public must recognize this growing danger and cooperate to establish means to reduce this mortality. Public heart clinics attended by well trained clinicians, and expert diagnosticians of large experience, should be established independently, or in connection with other public clinics. Industrial schemes for physical examinations and reexaminations should be encouraged in order to keep a check on the employees, discover defects and infections, and detect early signs of circulatory embarrassment. Frequent reexaminations of convalescents should be made, especially those recovering from infections, and of those in health after middle life. More attention should be given to the heart of the puerperant and to the children of parents having "rheumatism" and cardiovascular diseases. More attention should be given to infections and bacterial

diseases of childhood, with especial reference to their complete recovery, and the detection and removal of all foci of infection. More attention should be given to the causes of capillary spasms and hypertension, with especial reference to defects of infancy and childhood, endocrine and reflex disturbances, auto and intestinal intoxication. The public should be informed of the causes of cardiovascular diseases and of the importance of keeping well; of the need of proper relaxation and recreation, as well as the need of proper work, exercise and living.

Malignant Disease of Lung with Stomach Symptoms.—In the four cases reported by Leitz, the presenting symptoms were almost entirely referable to disturbances of the digestive tract at the onset, respiratory discomfort being absent or extremely slight in every instance. In one of the cases there were found metastases in the brain. Another patient died about two months after the onset of the respiratory symptoms. Leitz suggests that in all patients developing gastric disturbances after the fortieth year of life, associated with a slight dyspnea, together with loss of flesh and weakness, carcinoma of lungs should be considered as a possibility in diagnosis.

Subdiaphragmatic Pain of Cardiac Origin.—Billings has seen a number of cardiovascular patients whose symptoms were mainly referable to the upper abdomen, with nausea, vomiting and distress which seemingly pointed to the digestive tract as its origin. One patient complained of spitting and vomiting blood, also shortness of breath, general malaise, loss of sleep, epigastric pain and tenderness and cardiac palpitation. He was sent to the hospital with a diagnosis of a grave gastro-intestinal lesion, but as a matter of fact the abdominal pain, the nausea and vomiting with the objective signs, were all referred from a laboring and dilated heart. There was probably an acute auricular flutter, and each auricular impulse was followed by a corresponding ventricular contraction (response), with the resulting grave myocardial impairment. Massive doses of digitalis gradually produced the desired partial blocking, eventually the auricular fibrillation developed, and soon thereafter an absolutely normal rhythm.

Carcinoma of Ependyma.—In the case reported by Warfield, the resemblance to tuberculous meningitis was so great that when first examined in gross it was thought to be that disease. The patient was only 13 years of age. Symptoms had been manifested for about a year. The pathologic diagnosis was: ependymal glioma of the carcinomatous type, primary in the region of the fourth ventricle; extension through ventricles, basal meninges, neighboring portions of brain and hypophysis.

Calcium Therapy of Asthma, Hay-Fever and Eczema.—Pottenger reports favorable results from the use of calcium in anaphylaxis, serum disease, urticaria, asthma, hay-fever, bronchitis, affections of the gastro-intestinal tract, and eczema with severe itching of the skin.

Arkansas Medical Society Journal, Little Rock

20: 99-112 (Nov.) 1923

Severe Crushing Injuries to Knee Joint. W. F. Smith, Little Rock.—p. 99.

Boston Medical and Surgical Journal

189: 797-844 (Nov. 22) 1923

Municipality and Its Public Health Program. "A Step on Road to Freedom." J. M. Curley, Boston.—p. 797.
Half Century of Medicine. J. P. Sutherland, Boston.—p. 799.
Statistics and Doctor. E. B. Wilson, Boston.—p. 804.
Medical Graduate and His Public Duties. E. R. Kelley, Boston.—p. 806.
Hypertension. F. M. Allen, Morristown, N. J.—p. 810.
*Inadequacy of Measured Diet as Index of Food Metabolized. H. B. Richardson, New York.—p. 813.

Inadequacy of Measured Diet as Index of Food Metabolized.—Since in the metabolism of fat and carbohydrate the end products are excreted by way of the lungs, Richardson asserts that it is evident that they can be measured directly by means of the respiratory exchange. The indirect measurement by means of the weighed diet and the estimation of the glucose in the urine is liable to error, owing to the ability of the patient to store food within the body or to withdraw it from storage. Examples of the divergence between the food ingested and the food oxidized have been given in cases of fasting, typhoid, nephritis and diabetes. The error to which an uncritical use of the weighed diets may lead has been pointed out. Richardson denies any intention to decry their use; on the contrary, he insists that they should be used whenever possible, bearing in mind the fact that in no case do they represent with accuracy the actual quantities of food oxidized by the patient. Without a weighed diet the physician may be totally at sea; with it, he needs to apply the mental procedure which he uses in every diagnosis, that is, the effort to visualize the processes which are going on within the tissues of the patient.

Boston Medical and Surgical Journal

189: 845-906 (Nov. 29) 1923

Nonunion in Shaft Fractures. Treatment. F. J. Cotton, Boston.—p. 845.
*Alterations in Liver Function and in External Secretory Activity of Pancreas in Diabetes Mellitus. C. M. Jones, Boston.—p. 851.
Early History of Rutland Sanatorium. V. Y. Bowditch, Boston.—p. 853.
Tuberculosis Research in State Tuberculosis Sanatoria. S. J. Maher, New Haven, Conn.—p. 857.
Significance of Rutland to Nation. H. L. Barnes, Wallum Lake, R. I.—p. 862.

Alterations in Liver and Pancreas Functions in Diabetes.—The purpose of the investigation made by Jones has been to ascertain, if possible, the existence of important changes in liver and external pancreas function in diabetes mellitus. The finding of such changes, it was hoped, might lead to a somewhat clearer understanding of the essential nature of the disease. The work is still in progress. Out of a group of seventy diabetics, approximately 50 per cent. showed proteolytic activity that was below the minimum normal level as established by McClure. Thirty per cent. showed protein splitting activity far below this minimum normal. Lipolytic activity was also diminished below the lowest normal figures in about 50 per cent. of the cases. About 40 per cent. of the cases showed diminution below normal in both proteolytic and lipolytic activity. Fewer than 10 per cent. of the total number of cases showed marked lowering of amylolytic activity. Estimations of the bile pigments in the duodenal contents revealed the fact that in over 60 per cent. of the cases the bilirubin content of the bile was increased distinctly above the upper limit of normal. In approximately half of the cases the urobilin figures were well above the high normal findings, and over a third of the cases showed an extremely high elimination of urobilinogen. In about 10 per cent. of the cases the duodenal contents showed a sediment that was very suggestive of gallstone formation.

Canadian Medical Association Journal, Montreal

13: 781-862 (Nov.) 1923

Uterine Bleeding and Causes of Uterine Hemorrhage. F. W. Marlow, Toronto.—p. 781.
Uterine Hemorrhage. F. A. Cleland and D. M. Low, Toronto.—p. 790.
Uterine Curettage: Its Multiple Contraindications and Limited Indications. E. St. Jacques, Montreal.—p. 795.
Transperitoneal Cervical Cesarean Section. N. M. Guiou, Ottawa.—p. 797.
Acute Intestinal Intoxication in Infants. A. Brown and G. Boyd, Toronto.—p. 800.
Acute Intestinal Intoxication. H. Little, London.—p. 803.
Chronic Sinusitis in Children. J. G. Strachan, Toronto.—p. 807.
Heart Disease in Children. A. P. Hart, Toronto.—p. 810.
*Clinical and Biochemical Study of Muscular Weakness in Infant. T. C. Brereton and A. T. Cameron, Winnipeg.—p. 813.
Biopsies and Completion of Certain Surgical Procedures. N. B. Gywn, Toronto.—p. 820.
Present State of Knowledge Regarding Rejuvenation. A. W. Downs, Edmonton.—p. 824.
*Comparison of Quantitative Tests for Sugar in Urine. W. S. Barclay, Winnipeg.—p. 828.

Study of Muscular Weakness in Infant.—A case of muscular weakness in an infant is described by Brereton and Cameron in which the clinical symptoms present some likeness to those in amyotonia congenita, but the chemical examination negatives this possibility. The creatin and creatinin excretion are both much below normal, and the child apparently cannot manufacture the normal supply of creatin. Feeding creatin in beef broth appeared to improve the condition. When the beef broth was discontinued creatin elimination

fell rapidly, and the muscular development showed no further increase. The infant was breast fed for eleven months (with a short interval of a few weeks during the eighth month). The mother's milk contained the normal amount of creatinin but only a trace of creatin.

Quantitative Test for Sugar in Urine.—Barclay has modified Benedict's method slightly. The test is done as follows: A twenty-four hour specimen of urine is collected from the patient, shaken thoroughly, and a sample taken which should be tested within a day if possible. Three gm., roughly, of crystalline sodium carbonate is placed in a test tube, with a little talcum to prevent bumping, and exactly 5 c.c. of Benedict's reagent is added. This is held over a flame and kept boiling while urine is added drop by drop from a graduated 1 c.c. pipet until the blue color has entirely disappeared and a white end point is obtained. With alkaline urine the end point is usually a brownish white. The reading is taken from the pipet and the calculation is made as follows: Suppose the twenty-four hour specimen is 2,000 c.c. and the pipet reading is 1.25 c.c. of urine. Since 5 c.c. Benedict's is reduced by 10 mg. glucose and since 5 c.c. Benedict's is reduced by 1.25 c.c. urine, it follows that 1.25 c.c. urine contains 10 mg. glucose. Therefore, in twenty-four hours the total output of glucose in the urine is $-\frac{2000}{1.25}\times 10 = 16{,}000$ mg. or 16 gm. Expressed in terms of percentage the result would be $\frac{16}{2000}\times 100 = 0.8$ per cent.

Indiana State Medical Association Journal, Ft. Wayne

16: 359-382 (Nov.) 1923

Conservation in Ethmoid Surgery. E. McGinnis, Chicago.—p. 359.
*Frequency of Thymic Hyperplasia in Toxic and Nontoxic Goiters. A. S. Giordano, South Bend.—p. 362.
Association of Paranasal Sinus Infection with Bronchopulmonary Disease. R. E. Repass, Indianapolis.—p. 366.
Medical Profession and People. I. Arthur, Patoka.—p. 369.

Thymic Hyperplasia in Goiter.—Giordano has reviewed the literature and analyzed 288 cases of toxic and nontoxic goiters that came to necropsy at the Mayo Clinic from 1914 to 1922, with a view to ascertaining the frequency of thymic hyperplasia in these cases. In 180 cases of exophthalmic goiters the thymus was present in 66 cases; in 53 cases of adenomatous goiter with hyperthyroidism the thymus was present in 27 cases, and in 55 cases of adenomatous goiter without hyperthyroidism the thymus was absent in all. Of the 139 cases with pneumonia absent and hyperplastic thymus present, pulmonary embolus occurred twice, apoplexy once and status thymicolymphaticus once. In summarizing the causes of death in 233 cases, comprising the exophthalmic goiters and the adenomatous goiters with hyperthyroidism, the thymus was found hyperplastic in 146 cases and not hyperplastic or atrophic in 87 cases. One hundred and thirty-nine of the patients that died as a result of toxic goiters had associated hyperplastic thymus without any superimposed acute or chronic disease. The remaining 7 had associated pneumonia which developed from two to four days before death. Of the 87 cases of toxic goiter in which the thymus was found atrophic or not hyperplastic, 69 patients died of pneumonia seven days or more after its onset; 10 had associated superimposed chronic wasting diseases and in only 8 no definite accountable cause for absence of hyperplastic thymus could be ascertained. Age is not an important factor to the frequency of degree of hyperplasia of the thymus gland.

Johns Hopkins Hospital Bulletin, Baltimore

34: 361-400 (Nov.) 1923

*Local Specific Therapy in Poliomyelitis. Utilization of Hypertonic Solutions in Serum Treatment of Experimental Poliomyelitis. W. L. Aycock and H. L. Amoss, Baltimore.—p. 361.
*Clasmatocytes and Tumor Cells in Cultures of Mouse Sarcoma. W. H. Lewis and G. O. Gey, Baltimore.—p. 369.
*Effect of Intravenous Administration of Mercurochrome on Bacteriostatic Action of Blood. J. H. Hill and J. A. C. Colston, Baltimore.—p. 372.
Reversible Gelatin in Living Cells. M. R. Lewis, Baltimore.—p. 373.
*Strains of Hemolytic Streptococci Recovered from Carriers and Cases During an Outbreak of Acute Tonsillitis. A. R. Felty and A. L. Bloomfield, Baltimore.—p. 379.
*Precipitin Reactions of Crystalline Globulin from Human Urine. H. S. Everett, S. Bayne-Jones and D. W. Wilson, Baltimore.—p. 385.
Rate of Locomotion of Ameba in Alkali Chlorids. J. G. Edwards and H. S. Forgrave, Jr., Baltimore.—p. 387.
*Poikilocytes in Otherwise Normal Blood (Elliptical Human Erythrocytes). J. G. Huck and R. M. Bigalow, Baltimore.—p. 390.
*Mode of Spread of Outbreak of Acute Tonsillitis. A. L. Bloomfield and A. R. Felty, Baltimore.—p. 393.

Hypertonic Solutions in Serum Treatment of Experimental Poliomyelitis.—The experimental findings presented by Aycock and Amoss indicate that the use of intravenous hypertonic solutions of sodium chlorid in conjunction with intraspinal convalescent serum has a favorable influence on the course of experimental poliomyelitis. This effect is augmented by the intravenous injection of convalescent serum at a time corresponding to the compensatory increase in passage of fluid from the circulation to the central nervous tissues. Daily repetition of hypertonic sodium chlorid solution is associated with danger of respiratory failure.

Clasmatocytes and Tumor Cells in Mouse Sarcoma Cultures.—Cultures of mouse sarcoma No. 180 in Drew saline-embryonic juice medium showed only two types of migrating cells in the primary cultures; namely, clasmatocytes and tumor cells. The clasmatocytes were usually more abundant than the tumor cells. They began to migrate first and proceeded farther out on the coverglass than did the tumor cells. They were smaller and more irregular, with smaller nuclei and more vacuoles than the tumor cells. The carcinoma cells, which were more or less round in the explants, elongated and became irregular in outline as they migrated and flattened out on the coverglass. Both types of cells contained numerous fat globules of various sizes, granules and vacuoles which took up neutral red, and rather small granular and short rod-shaped mitochondria. In the early stages the vacuoles are more conspicuous in the clasmatocytes, but in older cultures the tumor cells may become highly vacuolated.

Effect of Mercurochrome on Bacteriostatic Action of Blood.—It it shown by Hill and Colton that mercurochrome injected intravenously increases the bacteriostatic action of blood against *B. coli*. This appears to be greatest from fifteen to forty-five minutes after injection, after which it rapidly disappears.

Hemolytic Streptococci in Acute Tonsillitis.—An attempt has been made by Felty and Bloomfield to classify strains of hemolytic streptococci obtained from cases of acute tonsillitis in a limited group of people. From the point of view of the immediate problem it has been possible to show that the cases of tonsillitis in the localized outbreak studied were not all caused by a single strain of streptococcus, but that at least four varieties were concerned, and that a still greater variety were parasitic among carriers in the group.

Precipitin Reactions of Crystalline Globulin from Human Urine.—The crystalline globulin isolated from human urine by Noel Paton is another example of a protein of human origin which can be sharply differentiated by the precipitin test from the proteins of human serum. This crystalline protein differs from all specimens of Bence-Jones protein studied by Everett, Bayne-Jones and Wilson. It possesses immunologic properties peculiar to itself. On the basis of its immunologic reactions and its failure to dissolve on boiling, the authors are of the opinion that it is not to be classified as a Bence-Jones protein.

Poikilocytes in Normal Blood.—Huck and Bigalow report one case which was made the subject of experimental study. Their results lead to the conclusion that this particular or special poikilocytosis is an inherent property of the red blood cells or an anomaly of the bone marrow, and the patient's serum is without effect on normal erythrocytes. This anomaly cannot be transmitted by transfusion of blood.

Intensive Crowding Spreads Tonsillitis.—The outbreak of tonsillitis studied by Bloomfield and Felty developed—at least in the main—not by case to case infection but by transfer from healthy carriers to susceptibles, and intensive crowding was necessary to bring about transfer of virus of a degree adequate to produce disease. Such crowding was found to occur in the dormitories during hours of recreation. It was also shown that the striking seasonal variation in the occurrence of tonsillitis could be explained by cessation of crowding during the summer months.

Journal of Industrial Hygiene, Boston

5: 245-278 (Nov.) 1923

Working Capacity and Effect of Alternating Occupation on Output. J. P. Baumberger, Stanford, Calif.—p. 245.
Lead Poisoning in Golf Professional: Case Report. C. M. Davis, Cleveland.—p. 253.
Present Status of Problem of Resuscitation in Cases of Electric Shock and of Carbon Monoxid Poisoning. C. K. Drinker, Boston.—p. 255.
General and Occupational Prevalence of Bronchitis. Its Relation to Other Respiratory Diseases. E. L. Collis.—p. 264.

Journal of Laboratory and Clinical Medicine, St. Louis

9: 71-140 (Nov.) 1923

Metaphen; New Organic Mercury Compound with Powerful Germicidal Properties. G. W. Raiziss and M. Severac, Philadelphia.—p. 71.
Supposed Disturbing Factors in Wassermann Reaction. F. Green, Montreal.—p. 80.
*Sodium and Potassium Content of Blood Serum in Various Diseases and of Cerebrospinal Fluid in Proved and Suspected Syphilis. C. S. McVicar and H. Ross, Rochester, Minn.—p. 87.
Pharmacology of Benzyl Alcohol and Its Esters. II. Some Effects of Benzyl Alcohol, Benzyl Benzoate and Benzyl Acetate on Respiratory and Circulatory Systems When Injected Intravenously. C. M. Gruber, St. Louis.—p. 92.
Clinical and Laboratory Procedures in Pediatrics. A. Levinson, Chicago. —p. 113.
Variations of Percentage of Hemoglobin in Man During Day. I. M. Rabinovitch, Montreal, Quebec.—p. 120.
*Cross-Fixation of Syphilitic Antigen by Tuberculous Serums. R. A. Kilduffe, Los Angeles.—p. 124.
Shipping Patients' Serums Long Distances in Tropics for Wassermann Test. E. M. Knights, Managua, Nicaragua.—p. 125.
Improved Arrangement of Signal Magnet. J. W. Waddell, Charlottesville, Va.—p. 127.

Sodium and Potassium Content of Blood Serum in Disease.—McVicar and Ross report their findings as follows: Average sodium in blood serum of fifty-six patients with various diseases, 365.0 mg. for each 100 c.c.; average sodium in cerebrospinal fluid of nine patients with syphilis, 382.0 mg. for each 100 c.c.; average potassium in blood serum of 118 patients with various diseases, 20.7 mg. for each 100 c.c.; average potassium in cerebrospinal fluid of 117 patients with proved or suspected syphilis, 10.5 mg. for each 100 c.c. The authors have not found characteristic changes in the sodium or potassium content of the blood serum in the diseases studied.

Cross Fixation of Syphilitic Antigen by Tuberculous Seruma.—The data presented by Kilduffe indicate that there is little support for the assumption that tuberculosis per se can give rise to a false positive complement-fixation reaction with syphilitic antigens, and such positive reactions, when obtained in tuberculosis, necessitate an exhaustive examination for evidence of coincident syphilis.

Journal of Radiology, Omaha

4: 381-410 (Nov.) 1923

Carcinoma of Lingual Thyroid with Metastases in Lungs. A. F. Tyler, Omaha.—p. 381.
Cancer from Surgical Standpoint. A. J. Ochsner, Chicago.—p. 384.
Gamma Ray Dosage of Radium. O. Glasser, Cleveland.—p. 386.
Duodenal Regurgitation. P. Eisen, Detroit.—p. 388.
Roentgen Rays and Roentgen Apparatus. An Elementary Course. J. K. Robertson, Kingston, Canada.—p. 391.

Maine Medical Association Journal, Portland

14: 71-100 (Nov.) 1923

Ocular Manifestations of Inflammation of Accessory Nasal Sinuses. C. H. Gordon, Portland.—p. 71.
Digestive Disturbances in the Bottle-Fed Infant. A. Fellows, Bangor. —p. 83.

Medicine, Baltimore

2: 349-404 (Nov.) 1923

*Etiology and Pathogenesis of Rickets. J. Howland, Baltimore.—p. 349.
Antiketogenesis: Its Mechanism and Significance. P. A. Shafer, St. Louis.—p. 375.

Decline of Rickets Incidence.—Howland closes his review by stating that rickets has had its day. It will be stamped out or at least reduced to insignificant proportions. Indeed it is in the process of being stamped out. It is only the magnitude of the problem that makes it difficult. Hess and Unger showed what could be accomplished with an experimental area in New York. The whole city must be included in such a program and so must nearly every large city of Europe and America. The people as well as physicians must be educated. It is rather striking how far the process of education has already advanced. Not nearly so many severe forms of rickets are seen now as were seen ten or even five years ago. It is no unusual experience to have a poor woman in an outpatient clinic ask if it is not now about time to begin giving her child cod liver oil.

Military Surgeon, Washington, D. C.

53: 411-528 (Nov.) 1923

Benefits Derived by Military Medical Science from Animal Experimentation. E. B. Vedder.—p. 411.
Training Medical Student for Service in Time of War. H. C. Rutherford.—p. 442.
Instruction of Reserve and National Guard in Aviation Medicine. L. H. Bauer.—p. 457.
Specific Prevention and Specific Treatment of Lobar Pneumonia. R. L. Cecil.—p. 462.
National Psyche Vs. Toxic Chemical Warfare—A Vulnerable Sector in Line of National Defense. N. W. Sharpe.—p. 40.
Tactics; The Therapy of Warfare. G. M. Blech.—p. 489.

New York Medical Journal and Medical Record

118: 601-660 (Nov. 21) 1923

Etiology of Gout. R. L. J. Llewellyn, London.—p. 601.
Tuberculosis Among North American Indians. S. A. Knope, New York.—p. 608.
Coexisting Intra-Uterine and Extra-Uterine Gestation. J. M. Keys, New York.—p. 611.
Peptic Ulcers Accompanied by Deformities of Stomach Visible by Roentgen Rays. M. Einhorn, New York.—p. 612.
*Comparative Blood Studies in Smallpox and Chickenpox. W. H. Hoffmann, Havana, Cuba.—p. 616.
*Effect of Placenta on Menstruation. A. Jacoby, New York.—p. 619.
Threadworms in Appendix. L. Rogers, London.—p. 620.
Corneal Injuries in Industrial Occupations. F. Allport, Chicago.—p. 621.
Retrobulbar Neuritis Associated with Diseases of Nasal Accessory Sinuses. E. L. Falk, Brooklyn, N. Y.—p. 624.
One Hundred and Four Mastoid Operations. J. M. Smith, New York. —p. 626.
Massive Neoplasm of Lung with Paralysis of Diaphragm. Recovery After Intensive Deep Roentgen Ray Irradiation. J. H. Schroeder, Cincinnati.—p. 628.
Neurologic Phase of Otology. Simple Presentation of Bárány Tests. M. C. Myerson, Brooklyn.—p. 631.
Survey and Interpretation of Spastic Phenomena of Gastro-Enteric Tract. M. Golob, New York.—p. 633.
Once a Cesarean Always a Cesarean? J. T. Schell, Philadelphia.—p. 637.

Blood in Smallpox and Chickenpox.—Blood studies were undertaken by Hoffmann in sixty cases of variola and forty cases of varicella. The differential count in both diseases revealed pronounced but identical changes, characterized by high lymphocytosis with a corresponding reduction of the number of polymorphonuclears, high increase of eosinophils, presence of myelocytes, changes in the Arneth Index. Those changes show a distinction from other diseases with similar clinical symptoms. For the differential diagnosis of the two diseases it is decisive, that in variola the number of the leukocytes is regularly highly increased for weeks, whereas in varicella there are normal numbers or only a slight increase from the eighth to the tenth day. If in a clinically suspicious affection the typical blood changes are missing, the diagnosis of variola or varicella can be excluded with a fair degree of safety. The changes are marked in variola for forty days and in varicella for twenty days at least. The degenerative changes in the red blood cells and the hemoglobin, though present, are slight and of no great specific importance, especially in the tropics.

Effect of Placenta on Menstruation.—In a series of twenty-five cases of menorrhagia, extract of placenta was administered in 5 grain doses (0.3 gm.), three times a day by Jacoby. The duration of the menstrual periods varied from five days to two weeks. In the majority of cases there was an associated dysmenorrhea. The pathologic conditions present included tubal and parametric inflammation in sixteen cases, fibroids in three cases, subinvolution in three cases, retroversion in two cases, and cystic ovary in one case. The placental extract was continued for at least three months. In four cases there was no change in menstrual function, and in the other twenty-one cases, all showed a diminution of the amount of blood lost. The duration of the menstrual flow was reduced. In some instances the duration of the flow was unchanged, but the amount of blood lost was noticeably diminished. The discomfort and pain during menstruation

was considerably diminished in many instances. The blood pressure during the taking of the placental extract usually fell on an average of 10 mm. No ill effects were reported from prolonged taking of the extract, except in a few instances in which nausea and vomiting occurred.

Northwest Medicine, Seattle

12: 381-422 (Nov.) 1923

Acidosis in Infants and Children. J. H. Hess, Chicago.—p. 381.
*Thymus Gland Enlargement in Infants. E. J. Barnett, Spokane.—p. 387.
*Enlarged Thymus in Children. Report of Cases. H. Spohn, Vancouver, B. C.—p. 392.
*Artificial Enlarged Thymus. L. H. Smith, Portland.—p. 398.
Accessory Sinus Disease in Children. A. R. Jones, Boise, Idaho.—p. 399.
Some Hemorrhagic Diseases of Early Life. E. H. Smith, Ogden, Utah.—p. 402.

Thymus Gland Enlargement in Infants.—Twenty cases are reported by Barnett in which there was a remarkable similarity of symptoms, such as wheezing and "noise in throat"; "sore throat" and difficult breathing; "hard breathing"; difficult and noisy breathing; cough, wheezing and difficult nocturnal breathing; crowing sound on crying; frequent choking, inability to hold head up, and the head retracted in sleep, had been present for some time; crowing sounds; attacks of cyanosis; chronic "cold" and cough; frequent unexplainable convulsions; hoarse cry and wheezing respirations; mucus in throat and frequent choking. The direct diagnosis consists in finding in an infant manifesting persistent or aggravated respiratory symptoms from the first few weeks of life, the evidence of an enlarged thymus gland by percussion, its confirmation by fluoroscopy and roentgenogram, and its diminution with relief of symptoms after roentgen-ray treatment. A second roentgenogram is confirmatory of this decrease in size of the thymus gland. One roentgen-ray treatment is usually sufficient to relieve the symptoms and cause atrophy in the thymus.

Roentgenotherapy for Enlarged Thymus.—Five cases are reported by Spohn. Roentgen-ray treatment was resorted to in three cases with variable results. However, Spohn feels that in spite of this variability in course, the fact remains that in some cases roentgen-ray treatment is apparently producing good results and should be used as a routine.

Enlarged Thymus Not Cause of Death.—In the case of an infant dying suddenly, often on opening the thoracic cavity, the thymus gland presents itself as a large mass overlying the heart, trachea and great vessels. The conclusion is suggested that the enlarged thymus was the direct cause of death. An attempt was made by Smith to investigate experimentally the mechanical effect of a mass suddenly thrust into the anterior mediastinum in the region of the thymus gland. Under chloroform anesthesia varying amounts of paraffin were injected into the thorax of guinea-pigs in the thymic region. There were no injurious effects. The necropsy findings were as startling as in those of a human child with an enlarged thymus.

Ohio State Medical Journal, Columbus

19: 841-912 (Dec.) 1923

Essentials in Treatment of Acute Abdominal Conditions. G. W. Crile, Cleveland.—p. 845.
Problem of Subnormal and Psychopathic Child: New Method of Attack. L. A. Luric, Cincinnati.—p. 849.
*Management of Hypertension by Restriction of Salt. J. J. Selman, Cleveland.—p. 852.
Treatment of Chronic Suppurative Otitis Media. E. G. Galbraith, Toledo.—p. 860.
Division of Funds in Field of School Hygiene. E. R. Hayhurst, Columbus.—p. 863.
Congenital Absence of Right Ear with Cleft of Left Upper Eyelid F. P. Anzinger, Springfield.—p. 869.
*Milk Injections in Ophthalmology. D. W. Stevenson, Akron.—p. 870.

Food Restriction Lowers Blood Pressure.—Selman believes that adequate food restriction carried on for sufficient length of time will lower the blood pressure in a great majority of cases of hypertension and those patients whose pressures are not brought to normal are rid of their distressing symptoms and the danger of apoplexy. Another advantage is that patients are not made invalids and their activities curtailed. The diet should be so ordered that the excretion of salt is less than 0.5 gm. daily.

Milk Injections in Eye Diseases.—Stevenson believes that sterilized milk is one of the most useful analgesics. Generally the initial dose is 3 c.c. Later the dose is doubled. This dose can be given at least three times a week. Milk injections do not cure trachoma cases but they do relieve the corneal irritation and lessen secretion. Photophobia is a symptom which will often markedly lessen under milk injections. Vitreous opacities and turbidity of the aqueous and cornea will clear. It gives great relief in the early irritations of interstitial keratitis.

Philippine Islands Medical Association Journal, Manila

3: 227-284 (Sept.-Oct.) 1923

*Initial Lesion of Leprosy. L. Gomez, Manila, P. I.—p. 227.
*Ocular Manifestations in Leprosy as Observed at Culion, P. I. A. S. Fernando, Manila, P. I.—p. 230.
*Results of Leprosy Treatment at Culion Leper Colony. H. W. Wade, Culion.—p. 236.
*Clinical Aspects of Leprosy Treatment at Culion Leper Colony. C. B. Lara, Culion, P. I.—p. 241.
Antileprotic Treatment as Instituted at San Lazaro Hospital. S. Tietze, Manila, P. I.—p. 247.
Medical Economics and Ethics. S. DeL. Angeles, Manila, P. I.—p. 248.

Initial Lesion of Leprosy.—One hundred cases of leprosy were investigated by Gomez. The most frequent symptom noticed by adult patients was attributable to the nervous system. The majority declare that they first noticed numbness of the lower extremities, usually more or less localized to a well defined area. Next in frequency as the first manifestation was the appearance of red spots, usually on the face, and most frequently on the cheek about the malar bone. In a few of these cases the spots were single, but in the majority they were either multiple or generalized. Next in frequency were white spots, occurring also most frequently in the face; in a few cases the spots were single, more frequently they were either multiple or generalized. In a few cases the first symptom noticed was the appearance of nodules, usually generalized, in one case in the ear only. The outbreak of leprosy is frequently not connected with systemic disturbances. The great frequency of nervous manifestation is remarkable. It is impossible to point out with certainty any particular lesion as the local reaction produced by the entrance of the micro-organism at that particular point, or the reaction produced by the micro-organism that has already invaded the body without leaving any sign at its point of entrance. It is probable that the microbe enters the body in many cases without producing external change, then multiplies in the lymph spaces and spreads in the body, especially along the perineural lymph spaces.

Eye Lesions in Leprosy.—Of 400 cases of leprosy examined by Fernando, 232 were found with eye lesions. In fifty-four cases the eyeball only was involved; in 107 cases the adnexa only, and in seventy-one cases both eyeball and adnexa were involved.

Results of Leprosy Treatment at Culion.—A total of 4,067 patients had received antileprosy treatment at Culion between July 1, 1921, and Sept. 30, 1922. The time of treatment varied from fifteen months as a maximum, to less than three months. A total of practically 56 per cent. of the entire group, including those most recently put under treatment, are reported as improved, while 36 per cent. are stationary. The most favorable groups, taking the various influencing factors into consideration, are: females, the young, those recently infected, those who can tolerate large doses, those who can and do take the treatment regularly and those who do not develop reactions or serious complications.

Chaulmoogra Oil Treatment of Leprosy at Culion.—Injections of the ethyl esters of chaulmoogra oil is the only treatment given at present at Culion to the great majority of the patients. Administration is by intramuscular injection, usually given once a week. A few patients are receiving two injections a week; in these cases the total weekly dose is usually larger than that given to patients who receive only one injection. The ordinary initial dose is 0.5 c.c. This is increased 0.5 c.c. every week until the maximum tolerated dose is reached. The largest doses commonly reached are 4 and 5 c.c. A few can tolerate more than this, but very

many are never given more than 3 c.c. Children receive an initial dose of 0.25 c.c., and the weekly increase is proportionately small. However, they tolerate relatively larger doses than adults, which is an advantage, as intensive treatment is called for. The dosage is increased progressively so long as the patient does not complain of disturbance and there is no evidence of general reaction. The most common complaints are chest pain, weakness, or fever for several days. These, or reaction in the form of redness and swelling of old lesions, or the appearance of fresh ones, often cause the temporary suspension of treatment, after which a smaller dose is used for a time. Moderate local reaction at the site of injection, persisting for one week or longer, is not usually considered sufficient reason for omitting an injection. Concurrent tuberculosis, chiefly pulmonary, is the commonest underlying cause of the disturbances that limit the dosage. Other conditions, particularly nephritis and anemia, are also important. It is frequently found that some patients who for a time tolerate a fairly high dose, later develop signs of intolerance. In such cases the dose is reduced for a few weeks and later increased gradually. The treatment is, on the whole, productive of much benefit, and is distinctly promising in those cases that are not too advanced or too badly affected by complications for marked or permanent relief to be expected.

Public Health Journal, Toronto

14: 483-530 (Nov.) 1923

Significance of Jewish Dietary and Hygienic Laws. D. H. Fauman, Toronto.—p. 483.
Infantile Mortality. E. N. A. Savard, Montreal.—p. 489.
Prevention of Cancer. A. H. Wright, Ontario.—p. 501.

South Carolina Medical Association Journal, Greenville

19: 635-662 (Nov.) 1923

Practical Tonsil Hemostatics. J. W. Jervey, Greenville.—p. 637.
Hypernephroma. M. H. Wyman, Columbia.—p. 639.
Relative Value of Medical and Surgical Treatment of Duodenal and Gastric Ulcers. A. E. Baker, Charleston.—p. 642.
Duodenal Ulcer with Reference to Acute Perforation. H. S. Black, Spartanburg.—p. 646.
Technic of Spinal Anesthesia. C. M. Rakestraw, Chester.—p. 648.
Treatment of Enuresis. M. Weinberg, Sumter.—p. 651.
Enterostomy in Intestinal Obstruction. S. O. Black, Spartanburg.—p. 652.
Bismuth Salts in Treatment of Syphilis. J. R. Allison, Columbia.—p. 653.

Tennessee State Medical Association Journal, Nashville

16: 239-273 (Nov.) 1923

Lye Strictures of Esophagus. R. McKinney, Memphis.—p. 239.
Family Physician and His Relation to Specialist. H. L. Fancher, Chattanooga.—p. 241.
Significance of Pain in Right Iliac Fossa. V. J. DeMarco, Memphis.—p. 245.
Toxemia of Pregnancy. L. L. Sheddan, Knoxville.—p. 248.
Extra-Uterine Pregnancy of Eighteen Months' Duration; Complete Removal; Ligation of Right Ureter; Recovery. O. S. McCown, Memphis.—p. 253.
Epilepsy. S. S. Crockett, Nashville.—p. 256.
Glasses. G. H. Price, Nashville.—p. 260.
Fracture of Patella; Open Operation; Absorbable Sutures. E. T. Newell, Chattanooga.—p. 265.

West Virginia Medical Journal, Huntington

18: 225-280 (Nov.) 1923

Pyelitis in Children. W. B. Hunter, Huntington.—p. 225.
Diagnosis of Exophthalmic Goiter. W. B. Porter, Roanoke, Va.—p. 240.
Treatment of Lobar Pneumonia in Infancy and Childhood. F. B. Quincy, Panther.—p. 243.
Why Doctors Buy Worthless and Fraudulent Securities. S. O. Rice, Chicago.—p. 250.

Wisconsin Medical Journal, Milwaukee

22: 245-290 (Nov.) 1923

Milwaukee Medical Societies: An Eighty-Five Year Retrospect. C. A. Evans, Milwaukee.—p. 245.
Mistaken Kindness in Sanatorium Treatment of Tuberculosis. E. G. Bellis, Wauwatosa.—p. 254.
Diagnosis and Treatment of Sterility. C. H. Davis, Milwaukee.—p. 256.
Retroperitoneal Tumors: Report of Two Cases (Fibromyxoma). F. A. Stratton, Milwaukee.—p. 260.
Subacuate Bacterial Endocarditis. W. L. Bierring, Des Moines, Iowa.—p. 263.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

4: 241-288 (Oct.) 1923

Variation Phenomena in Streptococci; Virulence and Immunity. M. L. Cowan.—p. 241.
*Spleen and Immunity Reactions to Jensen's Rat Sarcoma. W. S. Lazarus-Barlow and R. H. Parry.—p. 247.
Spontaneous Desensitization. C. H. Kellaway and S. J. Cowell.—p. 255.
*Acid-Base Balance in Plasma in Later Stages of Pregnancy. J. Marrack and W. B. Boone.—p. 261.
Classification of Hemoglobinophilic Bacteria, Based on Their Relation to Blood Pigment and to "Vitamin" Factor. P. Fildes.—p. 265.
*Effect of Light on Organism. W. Cramer and A. H. Drew.—p. 271.
*Diphtheria Toxoid as an Immunizing Agent. A. T. Glenny and B. E. Hopkins.—p. 283.

Spleen and Immunity Reactions to Sarcoma.—Fresh tumor grafts, frozen and thawed grafts, and grafts that had been exposed to a heavy dose of roentgen rays were implanted into the spleen and subcutaneous tissues by Lazarus-Barlow and Parry to note the effect on the spleen and on immunization to tumor in general. After intrasplenic immunization the general resistance to later subcutaneous inoculation is raised and to a greater extent than after intracerebral or subcutaneous immunization. Intrasplenic inoculation retards growth in an established subcutaneous tumor, but does not lead to its disappearance.

Acid-Base Balance in Plasma in Pregnancy.—The blood pressure of seventeen normal pregnant women was examined by Marrack and Boone. They found that in the latter half of pregnancy there is, as a rule, a reduction of carbon dioxid tension in the blood; this produces a moderate alkalemia and reduction of plasma bicarbonate. In a minority of cases there is an actual alkali deficit.

Effect of Light on Organism.—The physiologic action of light from an ordinary mercury vapor bulb on the animal organism was studied by Cramer and Drew. Rats born and kept in darkness frequently show a diminution in the number of blood platelets as compared with rats kept on the same vitamin-poor diet in a well lighted room. This thrombopenia is sometimes associated with a definite anemia. Exposure of such animals to a mercury vapor lamp increases the number of blood platelets to normal, and, if an anemia is present, it increases the number of red cells. Rats kept in darkness do not exhibit intestinal lesions such as are found in vitamin A deficiency, nor do they develop the bacterial infections (xerophthalmia, septic lymph glands) characteristic of that deficiency. They do, however, develop these conditions sooner, when placed on a vitamin A deficient diet, than rats kept in a well lighted room. Rats kept on a vitamin A free diet develop a progressive thrombopenia and an atrophy of the intestinal mucosa. Exposure to a mercury vapor lamp, if applied from the beginning of the deprivation of this vitamin, delays the thrombopenia. If applied after a thrombopenia has set in, it will increase the number of platelets. Such exposures to light, however, do not prevent the eventual onset of the atrophy of the intestinal mucosa which results from the vitamin A deficiency. The conclusion is drawn that light is a stimulus to the formation of blood platelets. This explains the partial antagonism between vitamin A deficiency and exposure to light: light can counteract the one lesion—thrombopenia—produced by vitamin A deficiency, but cannot prevent the eventual atrophy of the intestinal mucous membrane. Exposure to light can, therefore, delay but cannot prevent the eventual cessation of growth and the eventual onset of bacterial infections resulting from the vitamin A deficiency. Absence of light accelerates the onset of these conditions. Light is, however, not an essential condition for the formation of platelets, and its absence can be counteracted, so far as the platelets are concerned, by an abundant supply of vitamin A. The fact that conditions which stimulate the production of platelets will delay the development of certain types of bacterial infections is further evidence in support of the view that platelets represent a mechanism against bacterial infection.

Diphtheria Toxoid as Immunizing Agent.—Glenny and Hopkins show what work has been done toward producing an ideal immunizing agent against diphtheria. Evidence is presented to show that the value of a diphtheria toxin for immunizing purposes increases as toxin changes into toxoid (or toxone). Toxins can be changed into toxoid by the action of liquor formaldehydi. Such modified toxin containing 1.5 minimum lethal dose per L O and 5 minimum lethal dose per L+ has been used for the production of toxin-antitoxin mixtures with a high immunity index.

British Medical Journal, London

2: 1013-1072 (Dec. 1) 1923

Drug Addiction. W. H. Willcox.—p. 1013.
*Cocain and Its Substitutes. E. Watson-Williams.—p. 1018.
*Pathology of Gastric Ulcer. M. J. Stewart.—p. 1021.
Treatment of Acute Primary Infections of Hand. D. P. D. Wilkie.—p. 1025.
Division of Vas Deferens in Prostatectomy. A. C. Morson.—p. 1032.
Value of Serologic Tests in Diagnosis. H. R. Dean.—p. 1033.
Medical Mycology. A. Castellani.—p. 1037.

Toxicity of Cocain and Its Substitutes.—The toxicity of various local anesthetics was compared experimentally by Watson-Williams by determining the minimum lethal doses. The effect of dilution was found to be a lowering of toxicity. Addition of epinephrin definitely lowered toxicity. It appears that the dose of anesthetic which will produce alarming symptoms with different drugs is a different fraction of the minimum lethal dose, cocain having a small fraction, for example, butyn a larger. Caution is urged in using butyn.

Pathology of Gastric Ulcer.—A consecutive series of 6,800 necropsies, of which a special group of 1,500 were intensively studied from the point of view of gastroduodenal pathology and a series of 120 stomach specimens removed at operation and submitted to microscopic examination, form the basis of Stewart's report. In the intensively studied series of 1,500 necropsies there were 130 cases of gastroduodenal ulceration equally distributed between the two organs. In twenty-eight cases chronic gastric ulcers were present, and in fifty-eight cases chronic duodenal. In the full series of 6,800 necropsies there were 150 cases with chronic gastric ulcer and 200 with chronic duodenal ulcer. The relative frequency here shown (3:4) differs considerably from that revealed by clinical statistics. In the series of 1,500 necropsies forty-two cases showed gastric scars, and thirty-six cases duodenal scars. Coincident chronic lesions (ulcers or scars) of the stomach and duodenum were met with in seven cases, but in only a single instance did an open chronic ulcer coexist in the two organs. Of 150 cases of chronic gastric ulcer fifty-eight were perforated. Perforation was present in 122 out of 200 duodenal ulcers, which came to necropsy. Of the anterior wall ulcers 80 per cent. had perforated, and of the posterior only 9 per cent. In the series of 6,800 necropsies thirty-three deaths from ulcer were due to hemorrhage. In thirteen of these the ulcer was gastric, in twenty duodenal. Ten per cent. of the cases of simple chronic ulcer coming to operation had developed cancer in the ulcer, and in one half of these the malignancy was unsuspected at the time of operation. In the series of 6,800 necropsies there were 150 cases of cancer of the stomach and only one case of primary carcinoma of the duodenum.

Indian Journal of Medical Research, Calcutta

2: 323-668 (Oct.) 1923

*Pathogenesis of Deficiency Disease. XIV. Occurrence of Ophthalmia in Pigeons Fed Exclusively on Parboiled Rice. Prevention by Addition of Soil to Food. R. McCarrison.—p. 323.
*Correlation Between Chemical Composition of Anthelmintics and Their Therapeutic Values. XIX. Drugs Allied to Thymol. J. F. Caius and K. S. Mhaskar.—p. 337.
*Id. XX. Carbon Tetrachlorid. J. F. Caius and K. S. Mhaskar.—p. 347.
*Id. XXI. Miscellaneous Anthelmintics. J. F. Caius and K. S. Mhaskar.—p. 353.
Id. XXII. Summary and Conclusions. J. F. Caius and K. S. Mhaskar.—p. 371.
Ascaricides. I. Relative Efficiency of Various Drugs in Expelling Round-Worms. J. F. Caius and K. S. Mhaskar.—p. 377.
*Chemotherapy of Antimonial Compounds in Kala-Azar Infection. IV. Therapeutic Values of Urea Stibamine. U. N Bramachari.—p. 393.
Id. V. Amino-Antimonyl Tartrates. U. N. Brahmachari.—p. 405.
*Id. VI. Cumulative and Tolerance Experiments with Tartar Emetic. U. N. Brahmachari.—p. 411.
Id. VII. Estimation of Small Quantities of Antimony in Presence of Organic Matter. U. N. Brahmachari and J. Das P. B. Sen.—p. 417.
*Nutritional Values of Heated Blood Agar. M. B. Soparkar.—p. 421.
Desiccated Nutrient Medium. A. C. Vardon.—p. 429.
Immunization with Relatively Avirulent Living Organisms. W. F. Harvey and K. R. K. Iyengar.—p. 433.
Immunization by Reinoculation, After Long Interval, with Diminished Dose of Vaccine. W. F. Harvey and K. R. K. Iyengar.—p. 437.
Reuse of Culture Mediums. Part II. N. Lal.—p. 441.
*Effect of Direct Sunlight on Sealed Cultures of Organisms. N. Lal.—p. 445.
Bionomics of Bed-Bug, Cimex Lectularius L., with Special Reference to Relations of Sexes. F. W. Cragg.—p. 449.
Revision of Culicine Mosquitoes of India; VI. Indian Species of Genus Finlaya Theo Adult Stage. P. J. Barraud.—p. 475.
Id. VII. P. J. Barraud.—p. 495.
Two New Species of Culex (Diptera, Culicidae) from Assam. P. J. Barraud.—p. 507.
*Relation of Malaria to Altitude. C. A. Gill.—p. 511.
*Treatment of Leprosy in Light of Nature of Its Spread Through Body. E. Muir.—p. 543.
Neuromotor System of Active Forms of an Eutrichomastix Parasite from Intestine of Common Indian Lizard. F. DeMello.—p. 579.
Resistant Forms of Leishmania Donovani Found in NNN Cultures. J. W. Cornwall.—p. 587.
Progress Report of Kala-Azar. F. P. Mackie, B. M. Das Gupta and C. S. Swaminath.—p. 591.
*Concentration of Anticobra Serum. I. In Vacuo and Dilution. J. F. Caius and K. R. K. Iyengar.—p. 601.
Diphtheria Bacillus Carriers in Mixed Indian Population A. C. Vardon.—p. 611.
Comparative Experiments on Transmission of Plague by X. Cheopis and X. Astia. Epidemiologic Evidence as to Relation of These Fleas to Epilemic Plague. J. Taylor and G. D. Chitre.—p. 621.
Simple Apparatus for Obtaining Constant Drop Flow of Saline Solutions. J. Taylor.—p. 639.
Electrical Rat Guard for Ships' Hawsers. J. Taylor and G. D. Chitre.—p. 643.
*Urea Stibamine in Kala-Azar. H. E. Shortt and R. Taran Sen.—p. 653.
Malaria in Punjab. C. A. Gill.—p. 661.
Recovery of Herpetomonas Donovani from Urine of Kala-Azar Cases. H. E. Shortt, C. S. Swaminath and R. T. Sen.—p. 667.

Vitamin in Garden Soil.—It would appear from McCarrison's observations that while parboiled rice contained a sufficiency of vitamin B to protect the majority of pigeons against polyneuritis, it did not contain a sufficiency of some substance capable of preventing the development of ophthalmia. However, garden soil—freed of rootlets as far as possible—contained some substance which afforded protection against ophthalmia. This substance was destroyed by exposure to a temperature of 130 C. in the autoclave for one and a half hours.

Vermicidal Action of Thymol and Carvacrol.—The vermicidal action of thymol and carvacrol on hookworms and their toxicity toward the host, according to Caius and Mhaskar, are conditioned by the benzenoid structure, the phenolic character, and the position of the hydroxyl group relatively to methyl. Hydrogenation of the benzene nucleus lowers the toxicity toward the parasite, but raises the toxicity toward the host (menthol, camphor). The destruction of the hydroxyl group leads to the formation of nonanthelmintic toxic compounds (camphor). Esterification of the phenolic hydroxy group leads to the formation of nonanthelmintic nontoxic compounds (thymotal). The orthocompound (carvacrol) is less toxic toward the parasite but more toxic toward the host than the metacompound (thymol).

Carbon Tetrachlorid Acts on Hookworms.—Caius and Mhaskar found carbon tetrachlorid to be a powerful vermicide for hookworms, acting equally well on ancylostomes and necators.

Anthelmintic Property of Santonin.—The respective anthelmintic power of seven santonin derivatives was compared by Caius and Mhaskar with that of santonin. The results of the tests show that the anthelmintic properties of santonin are not correlated with its lactone structure.

Urea Stibamine in Kala-Azar.—A series of cases are reported by Brahmachari in which a cure was effected by the intravenous injection of urea stibamine.

Cumulative Action of Tartar Emetic.—Brahmachari reports that repeated injections of tartar emetic in sublethal doses gave rise to no tolerance toward the drug except in rare instances. Generally the results pointed to a cumulative action of the drug, or at least made the animal susceptible to the next higher dose.

Nutritive Value of Heated Blood Agar.—Experiments made by Soparkar showed that unheated blood affords a poorer growth of *B. influenzae* than heated blood. The growth-promoting quality of heated blood is gradually developed as the temperature used in heating rises. The maximum development of this growth-promoting quality in the case of *B. influenzae* takes place for a temperature of from 67 to 70 C. applied for from ten to fifteen minutes. Heating the blood used in the medium at temperatures beyond the optimum leads to a gradual destruction of this quality. The luxuriance of growth of *B. influenzae* on heated blood mediums depends, within certain limits, on the concentration of blood in the medium.

Sunlight Kills Tube Cultures.—Lal asserts that exposure to direct sunlight is lethal to organisms contained in sealed tubes, but this may be due to the sterilizing effect of the heat rays. The cholera vibrio showed itself much more susceptible than the other organisms used.

Relation of Malaria to Altitude.—It is stated by Gill that the lessened frequency and severity of malaria with increase in altitude is due to correlated changes in atmospheric temperature and humidity which occasion a lessened period of liability to infection and a predominance of benign tertian malaria in elevated regions. Altitude, through its influence on atmospheric temperature and humidity, is held to be the main factor determining the orographic distribution of indigenous malaria, but no constant relationship would be expected to exist between altitude and malaria since the temperature and humidity conditions prevailing at any given altitude vary both with latitude and with local physiographic features and meteorologic conditions.

Treatment of Leprosy.—In a previous paper Muir advanced the hypothesis that the center of interest in the treatment of leprosy must be the "gloea" or mucus-like substance in which the bacilli lie embedded in the lymph spaces, which fastens them to the cells lining these lymph spaces and prevents their rapid dissemination, protects them from the tissues of the body, and makes it possible for them to multiply. The body resistance must be strengthened to prevent the multiplication of bacilli which takes place during the quiescent phase of the disease. Reactions appear to result from the setting free of bacilli from the gloea in large numbers and from the breaking down of bacilli in the lymph spaces. In order to control such reactions and prevent excessive broadcasting of bacilli, which might result in the formation of fresh foci in other parts of the body, it is advisable to bring about by medicinal means small reactions while the resistance of the tissues is at a high level. There is in leprosy a distinct tendency to spontaneous resolution. Were no fresh areas infected, the disease would very quickly die out of the body. Rise of temperature, where only temporary and not accompanied by conditions which will cause debility, has a beneficial effect in leprosy. The greatest improvement invariably results for those patients who take abundant exercise.

Concentration of Anticobra Serum.—Caius and Iyengar suggest that in the treatment of cobra bite with anticobra serum it is advisable to dilute the serum with its own volume of either distilled water or saline solution.

Urea Stibamine in Kala-Azar.—The average amount of urea stibamine used by Shortt and Sen in each case was 2.6 gm. The average number of inoculations required for, and the average period occupied in, actual treatment with the drug were twelve inoculations and thirty-two days, respectively. The authors are enthusiastic over the results.

Lancet, London

2: 1171-1220 (Dec. 1) 1923

Vis Medicatrix Naturae. F. W. Mott.—p. 1171.
Intracranial Tumors. H. S. Souttar.—p. 1176.
*Mechanical Apex Tracings. A. Mougeot.—p. 1182.
*Bilharziasis of Ureter. A. B. Ibrahim.—p. 1184.
*Case of Arteriovenous Aneurysm of Neck. A. W. Mooro.—p. 1186.
*Chronic Prostatitis and Lupus Erythematosus. E. T. Burke.—p. 1187.

Apex Tracing of Heart Beat.—The apical tracing or mechanical registration of the heart beat taken by means of an adequate technic Mougeot says would seem to be a method of examination of great value, because it gives information concerning the cardiac contraction, the duration of each phase, the intravcntricular pressure curve, and functional value of the heart muscle—points concerning which the electrocardiogram tells nothing.

Bilharziasis of Ureter.—That bilharziasis of the ureter exists, and may be the only, or the most prominent, manifestation of the disease is evident. Ibrahim reports eleven cases. The disease is usually bilateral, though more advanced on one side than on the other. The disease is very chronic, and the stages merge one into the other. The disease ends in the formation of fibrous tissue, which replaces the normal coats of the ureter. This leads to contraction and narrowing or even complete obliteration of the lumen of the lower part of the ureter. Secondary to this the upper part of the ureter and pelvis of the kidney become dilated. Ascending infection is rare, and is mostly a complication of bilharziasis of the bladder. The disease, if neglected, is generally fatal, ending in death usually from uremia and rarely from septicemia.

Traumatic Arteriovenous Aneurysm of Neck.—In Mooro's case a gunshot wound of the common carotid artery was the cause of a cerebral embolism, resulting in word-forgetfulness. The case illustrates the relation between "word-forgetfulness" and a lesion of the posterior part of the brain; and the fact that a lesion of one vagus nerve is compatible with a normally functioning heart.

Chronic Prostatitis and Lupus Erythematosus.—Burke reports a case of chronic gonorrheal prostatitis complicated by lupus erythematosus. Seven years previously the patient had been torpedoed. He could not be certain that the skin condition was not present then, but, if it was, it became worse afterward. Excitement, exposure to sun and wind in an open boat for two days and severe mental stress probably were the deciding factors. Burke feels that in every case of lupus erythematosus the venereal history should be inquired into and the genito-urinary tract examined to eliminate the possibility of the focus of infection being situated therein.

Practitioner, London

111: 309-376 (Nov.) 1923

*"Sleeve" Amputation of Thigh in Severe Injury and Disease. W. I. de C. Wheeler.—p. 309.
Tuberculosis Immunity. N. Raw.—p. 317.
Cholecystitis and Gallstones. A. F. Hurst.—p. 321.
Minor Displacements of Vertebral Column as Frequent Primary Cause of Spinal Curvatures. Treatment by Manual Reposition. E. F. Cyriax.—p. 343.
Laryngofissure. F. H. Diggle.—p. 356.
*Treatment of Tuberculous Glands. E. F. Neve.—p. 362.
Early Diagnosis and Treatment of General Paralysis. E. W. Scripture.—p. 367.

111: 377-440 (Dec.) 1923

Treatment of Diabetes with Special Reference to Insulin. W. H. Willcox.—p. 377.
Intermittent Precordial Pain. G. H. Hunt.—p. 406.
Autotherapy in Paresis and Tabes Dorsalis. Report of Six Cases. A. G. Shera.—p. 417.
Effect of Suggestion in Two Cases of Nervous Disease. J. Burgess.—p. 426.
Injection of Antipneumococcus Serum as Aid to Diagnosis Between Pulmonary Disease and "Acute Abdomen." S. A. Banker.—p. 428.
Treatment of Pneumonia by Large Doses of Vaccine. A. Erian.—p. 430.

Sleeve Amputation of Thigh.—The "sleeve" amputation, referred to by Wheeler is a method designed to meet certain emergency operations with the least possible surgical risk, and with a view to the conservation of the longest possible stump. The orthodox method of obtaining healthy flaps above the injury or disease is departed from, and the amputation is carried very much lower than most textbooks would sanction. The "sleeve" operation is said to be suited particularly for cases of complicated fracture of the femur which are bad surgical risks. There is no division of bone with the saw, and there is a proportional diminution of shock. The operation is applicable to any position in the upper or lower limb.

Treatment of Tuberculous Glands.—It is Neve's belief that most tuberculous glands are due to local and not to blood infection, and if dealt with in accordance with cardinal surgical principles, these patients usually make a complete recovery. If they fail to do so, it is often because the operation was incomplete.

Archives des Maladies du Cœur, etc., Paris

16: 689-768 (Oct.) 1923

Klein-Gumprecht's "Shadows of Nuclei." G. Lion.—p. 689.
*Acute Leukemia. C. Aubertin and P. Grellety Bosviel.—p. 696.
*Action of Light on the Blood. P. Ramain.—p. 714.

Acute Leukemia.—Aubertin and Bosviel describe four cases of acute leukemia. They presented the syndrome described by P. E. Weil as pseudohemophilia or hemogenia: almost normal coagulation time; prolonged bleeding time; no retraction of the clot, and almost total absence of blood platelets. Cultures from the blood were negative.

Action of Light on the Blood.—Ramain observed phenomena resembling a hemoclastic crisis, beginning immediately after exposing subjects for a few minutes to sunlight or ultraviolet and infrared rays. He discusses the possibilities of explaining it by a vasomotor reaction, by dissolution of leukocytes, or by some reaction of the hemopoietic organs.

Bulletin de l'Académie de Médecine, Paris

90: 163-186 (Oct. 16) 1923

Surgical Treatment of Angina Pectoris. T. Jonnesco.—p. 168.
*Bone Grafts. L. Imbert.—p. 174.
*Protection Against Roentgen Rays. I. Solomon.—p. 182.

Bone Grafts.—Imbert found that the fate of transplanted bone depends on the place into which it is transplanted. If inserted in the gap in a resected bone it takes part in the formation of callus and persists. In other places it is absorbed.

Protection Against Roentgen Rays.—Solomon's experiments show that persons working in the rooms adjoining a roentgen-ray room are in no danger, if the work is done carefully. The sensitiveness of a photographic plate is incomparably greater than that of living tissues.

90: 211-260 (Oct. 30) 1923

Debate on Regulation of Midwifery. Bar.—p. 216. Cont'n.
*Experiments on Insulin. C. Delezenne, et al.—p. 236.
The Sympathetic in Bárány's Caloric Reaction. M. Lannois and R. Gaillard.—p. 254.

Experiments on Insulin.—Delezenne, Hallion and Ledebt obtained only small amounts of an active substance from other organs than the pancreas and the liver. Intravenous injection of inactive pancreatic secretion failed to produce effects. When they used old or desiccated glands, they obtained pancreatic extracts which increased glycemia. The titration of insulin is difficult. Convulsions may occur in animals before the sugar is low. They quote such experiments with 0.6 to 1 gm. of sugar per liter of blood. In other animals, with a blood sugar concentration below 0.45, no convulsions were noted. They believe that insulin itself, and not an impurity, is the cause of the accidents, because their preparation was very pure: (at least 3-4 units in a milligram of the substance). They believe that the cause of the convulsions is a disturbance of the balance of the carbohydrate content of the nerve cell.

90: 261-320 (Nov. 6) 1923

*Fermentative Meteorism. G. Hayem.—p. 279.
Vaccine Therapy of Paradenitis. P. Delbet et al.—p. 286.
Periarteritis Nodosa. G. Marinesco.—p. 289.
*Vaccination in Tunis. Dinguizli.—p. 300.
Bronchial Amebiasis. A. Panayotatou.—p. 305.
Preservation of Spirocheta Icterohemorrhagiae. A. Pettit.—p. 310.
Chylangioma of Mesentery. Abadie and Argaud.—p. 312.
Enterococcus in Gynecology. J. Abadie.—p. 316.

Fermentative Meteorism.—Hayem, who was the first to describe the meteorism due to swallowing saliva, deals with a similar condition due to abnormal fermentation in the stomach and intestine. Auscultation is a good method to reveal the condition, which may be due also to intestinal obstruction. Lavage of the stomach, reduction of carbohydrates, and three daily doses of 10 gm. of kaolin act favorably.

Smallpox Vaccination in Tunis.—Dinguizli publishes the decision of the local highest authorities in the Mohammedan religion, the ulemas of the great mosque at Tunis, on the question of vaccination. Though the Prophet asserted: "There is no disease, no contagion," and though the Mohammedan religion forbids treatment by "the unclean," they apply the Mohammedan law: "Of two evils, the lesser is to be chosen." The vaccination must be done only by physicians. In case of fatal result, they hold the doctor guiltless if he has followed the rules of the art. They apply to it the rule: "One must regard only the frequent cases and not the eventual death of one, two or three persons in a hundred." Since the promulgation of this *Fetwa*, the Mohammedans of Tunis submit willingly to vaccination. Only a few Europeans still try to escape it.

90: 321-336 (Nov. 13) 1923

Thermal and Climatic Resorts. A. Siredey.—p. 324.
Prosthesis for Hip Ankylosis. G. Bidou.—p. 329.
*Brain of Neanderthal Child. R. Anthony.—p. 330.
*Serologic Test in Cancer. Fischer and Kotzareff.—p. 334.

Size and Shape of a Prehistoric Child Brain.—Anthony reports his findings after examination of the skull of a Neanderthal child found in France. The skull of the child is as widely different from the present-day child skull as the skull of the Neanderthal adult is from the present-day adult's. As regards the volume of the brain, it is similar to ours, but its shape presents entirely different characteristics.

Biologic Research on the Serum in Cases of Cancer Before and After Injections of Radium Emanation.—Fischer and Kotzareff found that the serum of cancer patients which gives the "prostaxis reaction" before treatment, comes back to a hyponormal or normal state if clinically the treatment is having a good influence. The prostaxis reaction becomes more and more pronounced as the malignant disease progresses.

Bulletins de la Société Médicale des Hôpitaux, Paris

47: 1331-1345 (Oct. 12) 1923

Elastic Pseudoxanthoma. G. Caussade and J. Surmont.—p. 1333.
*White Dermographia. Sézary and Dessaint.—p. 1334.
Persistence of Encephalitic Virus. J. A. Sicard et al.—p. 1338.
Syphilitic Occipital Neuralgia. C. I. Urechia.—p. 1340.
Tumor Simulating Cerebral Syphilis. Urechia and Mihalescu.—p. 1341.
Pseudoparalytic Azotemia. C. I. Urechia.—p. 1343.

White Dermographia.—Sézary and Dessaint found that the intensity of the white line produced on the abdominal skin by a slight stroke does not depend on sympathetic tonus. At least it has no constant relation to the oculocardiac reflex. Epinephrin prevents its formation simply by contracting the vessels. It is absent in complete asystole, and reappears in the stage of cardiac compensation.

47: 1347-1374 (Oct. 19) 1923

*Sympathetic Tonus in Mumps. R. Benard.—p. 1347.
Congenital Malformation of Stomach and Heart. G. Variot and Cailliau.—p. 1348.
*Experimental Pancreatic Diabetes. J. Thiroloix.—p. 1352.
*Paralysis After Antitetanus Serum Treatment. R. Morichau-Beauchant.—p. 1357.
Cerebellar Disturbances in Melancholia. H. Claude et al.—p. 1360.
Iritis and Optic Neuritis in Infectious Jaundice. M. Leconte and Joltrois.—p. 1366.
Phenolsulphonephthalein in Hypertension. P. Merklen et al.—p. 1369.

Sympathetic Tonus in Mumps.—Benard found almost constantly the "white line" phenomenon in mumps, although the tonus of the sympathetic is at least normal in this disease.

Experimental Pancreatic Diabetes.—Thiroloix describes his new method of enucleation of the pancreas in dogs. He does not use ligatures. In complete enucleations, the action of insulin is transitory. Only these dogs can be used for determination of the strength of an insulin.

Paralysis After Antitetanus Serum Treatment.—Morichau-Beauchant describes a case of severe paralysis of both upper extremities which developed the tenth day after a preventive injection of antitetanus serum, two days after the onset of serum sickness.

47: 1375-1404 (Oct. 26) 1923

Neuritis After Tetanus Antiserum Treatment. Sézary and Dessaint.—p. 1375.
Azotemia and Psychic Disturbances. A. Lemierre.—p. 1377.
*Spontaneous Pneumothorax and Oleothorax. P. Emile-Weil et al.—p. 1382.
Hemicraniosis with Paget's Disease. Sicard and Laplane.—p. 1385.
Iodized Oil in Diagnosis of Intraspinal Adhesions. Sicard and Laplane.—p. 1389.
Serous Meningitis. C. I. Urechia and F. Tincu.—p. 1390.
*Experimental Research on Bronchial Catarrh, etc. E. Feuillié.—p. 1394.

Spontaneous Pneumothorax and Oleothorax.—The history of the case given here by Emile-Weil, Darbois and Pollet demonstrates the usefulness of oleothorax in the treatment of spontaneous pneumothorax.

Influence of Leukopathia and Anaphylaxis in Production of Bronchial Catarrh, Pulmonary Sclerosis and Emphysema.—Feuillié states that it is possible to induce in animals intense lesions of the bronchopulmonary apparatus with subcutaneous injections of various substances. He used for this purpose cantharidin or sodium cantharidate, chromic acid, diphtheria toxin or antitoxin, and normal horse serum. He was able to produce bronchial catarrh, intense congestion, lymphocyte infiltration and final atrophic emphysema with fragmentation of elastic fibers. He insists particularly on the fact that these anatomic manifestations were produced without a local lesion as irritant or to attract them. He has found identical lesions after repeated bleeding following thyroparathyroidectomy and peptonic and anaphylactic shocks.

Paris Médical

201-216 (Sept. 15) 1923

*Insulin. A. Desgrez, H. Bierry and F. Rathery.—p. 201.
Case of Hemimelia. M. Klippel and A. Feil.—p. 207.
Treatment of Hydatid Cyst in Lung. B. Peritchitch.—p. 214.

Insulin.—Desgrez, Bierry and Rathery admit the beneficial action of insulin on acidosis. They observed, however, cases in which the beta oxybutyric acid persisted, while acetone and acetoacetic acid disappeared. A given dose of insulin may lower the sugar content of the blood very differently at different times, even in the same subject. It is not needed in slight cases which improve under correct dieting. We do not know as yet whether insulin may not do harm. Sudden discontinuance of the insulin treatment appears to make the patient more susceptible to the acid poisoning.

241-272 (Oct. 6) 1923

Neurology in 1923. J. Camus.—p. 241.
*Decompressive Trephining and Puncture of Ventricle. J. A. Barré and P. Morin.—p. 252.
Chorea and Epidemic Encephalitis. L. Babonneix.—p. 255.
*Examination of Peripheral Paralysis. J. Froment.—p. 259.
*Nervous Lesions and Diabetes. J. Camus et al.—p. 267.
Cenesthesia. Laignel-Lavastine.—p. 268.

Decompressive Trephining and Puncture of Ventricle.—Barré and Morin measured the pressure of the cerebrospinal fluid during the decompression operation. They found that it goes down during the removal of the soft tissues and the drilling of the first hole. The removal of the bone, without opening the dura mater, does not cause any further immediate nor subsequent decline. Nevertheless the headache may stop, even if the pressure returns to the previous height. They believe it is the paroxysms of hypertension and not continuous high pressure that cause pain. The elastic dura stretches and serves as a safety valve in these attacks. If the pains return, puncture of the dura with removal of a few drops of the fluid relieves the patient. It is therefore important to remember that the headache may stop while the intracranial pressure, with its destructive action on the optic disk, remains high, as indicated by spinal puncture. Puncture of the ventricles lowers the pressure, and should be combined with the trephining or substituted for it.

Examination of Peripheral Paralysis.—Froment deplores the common view that electrodiagnosis can furnish the only objective signs of recent paralysis of peripheral nerves. It is neither an early sign, nor is it always present. On the contrary, examination of the function of the muscles may reveal important changes which do not depend on volition. The will allows us only to do or omit a certain act; it cannot modify the details of its unconscious mechanism. In paralysis of any nerve of a lower extremity, one should ask the patient to stand on one foot and swing the other. In paralysis of the external popliteal nerve, the contractions of the anterior tibial muscle, the extensors of the toes, and the peroneus longus are lacking. The play of the tendons returns as the patient recovers. With paralysis of the tibial nerve, the Achilles tendon is flabby instead of becoming as hard as wood in this position. Another sign of this affection is revealed when the patient flexes his legs extremely while lying prone. In health, this movement is accompanied by extension of the foot with flexion of the toes. The patella is immovable when the patient stands on the healthy leg, but it is easily movable if the femoral nerve is paralyzed. If a healthy hand is forcibly extended on the table, the tendons of the extensors of the fingers can be seen and felt as they move. They are not retracted in case of paralysis of the musculospiral nerve.

Nervous Lesions and Diabetes.—Camus, Gournay and Le Grand punctured the region of the tuber cinereum in rabbits and produced in some a glycosuria of several weeks' duration. The pituitary gland seems to have been also injured in most of them.

273-284 (Oct. 13) 1923

Addison's Disease. de Lagoanère and L. Masson.—p. 273.
*Scoliosis and Gymnastics. G. Joland.—p. 278.
Treatment of Leg Ulcers. J. Madier.—p. 281.

Scoliosis and Gymnastics.—Joland considers that rest is the best measure to apply in starting treatment of scoliosis. It suppresses the action of weight bearing, which is the chief noxious agent. After a complete rest of two or four weeks the child should always recline as much of the time as possible. Simple asymmetrical exercises and training in the correct upright position should follow.

285-312 (Oct. 20) 1923

Psychiatry in 1923. J. Camus and N. Péron.—p. 285.
*Psychanalysis of Obsessions. H. Claude.—p. 295.
*Uremic Fugues. H. Claude and A. Ceillier.—p. 299.
Senile Dementia. J. Lhermitte and Nicolas.—p. 301.
Hereditary Syphilis and Obsessions. Barbé and Denéchau.—p. 309.

Psychanalysis of Obsessions.—Claude believes the advantage of psychanalysis over other methods of psychotherapy consists in the better preparation of the patient for the final therapeutic persuasion. He agrees with Janet that the unfavorable opinion of certain prominent French psychiatrists is unfair and regrettable.

Uremic Fugues.—Claude and Ceillier report the histories of two cases of unconscious fugues in uremic patients. Such occurrences may be the first sign of azotemia. The medicolegal importance is self-evident.

Presse Médicale, Paris

31: 849-860 (Oct. 10) 1923

*Traumatic Lesions of Boxers. J. Braine and A. Ravina.—p. 849.
Treatment of Gangrene of the Limbs. L. Cheinisse.—p. 854.

Traumatic Lesions of Boxers.—Braine and Ravina describe the professional injuries of boxers, especially fractures of the metacarpal bones. They emphasize the comparatively harmless nature of the sport. The punching hand is more liable to be injured than the man who is hit. The knock-out from a blow on the jaw is absolutely painless. Only severe blows on the epigastrium cause discomfort. They recommend boxing as the most appropriate sport for intellectuals. Ears can be protected by a light cap and the teeth by a rubber protector.

31: 869-876 (Oct. 17) 1923

Functional Disturbances of Respiration. E. Sergent.—p. 869.

31: 877-884 (Oct. 20) 1923

*Etiology of Measles. G. Caronia.—p. 877.
Paralysis of Serratus and Trapezius. Patel and Bertrand.—p. 878.

Etiology of Measles.—A similar article was reviewed in these columns, Sept. 29, 1923, p. 1152.

31: 885-896 (Oct. 24) 1923

*Roentgenograms of Spinal Canal. J. A. Sicard, J. Paraf and L. Laplane.—p. 885.
*Surprises of Chloroform. L. Cheinisse.—p. 887.

Roentgenograms of Spinal Canal.—Sicard, Paraf and Laplane describe the technic of subarachnoid injections of iodized oil for roentgenographic examination of the spinal canal. The method is very valuable for localization of tumors. The iodized oil is absorbed extremely slowly (over two years) but does not cause any discomfort.

Surprises of Chloroform.—Cheinisse reviews some cases in which impurities of chloroform were responsible for accidents.

31: 897-904 (Oct. 27) 1923

*Pilocarpin. A. Cain and P. Oury.—p. 897.

Pharmacodynamic Action of Pilocarpin.—Cain and Oury recommend daily injections of 1 cg. of pilocarpin hydrochlorid or subnitrate in cases of retention of urine of nervous origin. The bladder empties usually after eight or ten minutes. The method is without effect in mechanical or inflammatory retentions. Claude found that pilocarpin has a favorable influence on the gastric crises in tabes.

31: 905-912 (Oct. 31) 1923

Bone Growth Studied in an Exostosis. Leriche and Policard.—p. 905.
Hygiene of the Sympathetic System. Laignel-Lavastine.—p. 906.

31: 925-936 (Nov. 7) 1923

*Fixation of Radium-Colloidal Substances. A. Kotzareff and L. Weyl.—p. 925.
*Duodenal Dyspepsia. Léon-Meunier.—p. 927.

Elective Fixation of Radium Emanations by Embryonal and Cancer Cells.—To be reviewed editorially.

Duodenal Dyspepsia.—Léon-Meunier's research showed that the alkalinity of pure duodenal juice in normal subjects corresponded to 0.2-0.4 per cent. hydrochloric acid. Lower alkalinity in dyspepsia and pains frequently testifies to cholelithiasis.

Revue Franç. de Gynécologie et d' Obstét., Paris

18: 553-584 (Oc. 10) 1923

*Maternity and Work. P. Carlini.—p. 553.
Cause of Tubal Pregnancy. M. Reeb.—p. 570.

Maternity and Work.—Carlini reviews the literature and adds his own statistics to demonstrate the unfavorable influence of continuous work on parturition, and especially on the weight of the new-born.

Schweizerische medizinische Wochenschrift, Basel

53: 921-944 (Oct. 4) 1923

*Injuries of the Knees. E. Bircher.—p. 921.
Pyelography and Pneumoradiography. Ritter and Allemann.—p. 927.
Treatment of Epidemic Encephalitis. H. Koller-Acby.—p. 932.
Movements of Intestines in Cats Studied by Abdominal Window. E. Lenz.—p. 935. Conc'n.

Injuries of the Knees.—Bircher deals with the diagnosis of injuries of the cavity of the knee joint. He also gives his technic for endoscopy of the joint.

53: 945-964 (Oct. 11) 1923

Indirect Injuries of Retina. A. Vogt.—p. 945.
*Endemic Appendicitis. A. Fonio.—p. 947.
Sphygmobolometry. Engelen.—p. 954.
Pyelography and Pneumoradiography. A. Ritter and R. Allemann.—p. 955. Conc'n.

Endemic Appendicitis.—Fonio believes that typical epityphlitis is caused by gram-positive diplococci and fine rod-shaped bacilli, as found by Aschoff. He publishes statistics which seem to indicate a contagious nature.

53: 965-988 (Oct. 18) 1923

*Treatment of Syphilis. Dind.—p. 965.
Treatment of Megacolon, Especially in Children. E. Monnier.—p. 973.
*Rupture of Tendon. W. Odermatt.—p. 977.
Exophthalmic Goiter from Abuse of Iodin. Graemiger.—p. 979.

Treatment of Syphilis.—Dind comments on the persistence of mucous and anovulvar lesions in syphilis and the spontaneous disappearance of cutaneous eruptions. Consequently no conclusions as to the efficiency of a drug can be drawn from its alleged action on skin lesions. He advocates arsphenamins and uses mercury only for treatment in the intervals.

Rupture of Tendon.—Odermatt discusses the etiology of spontaneous ruptures of the tendon of the long extensor of the thumb. They occur typically late after fractures of the radius, dislocation of the semilunar bone or sprain of the wrist.

53: 989-1008 (Oct. 25) 1923

*Microscopy of Living Eye. A. Vogt.—p. 989.
Infection and Stages of Tuberculosis. G. Liebermeister.—p. 995. Conc'n, p. 1019.
Prophylactic Pituitary Treatment. Reist and Guggenheim.—p. 1000.

Microscopy of Living Eye.—Vogt describes the technic and the results of ophthalmoscopy with the lamp with the luminous slit in combination with a binocular microscope.

Pediatria, Naples

31: 1081-1136 (Oct. 15) 1923

Bismuth in Hereditary Syphilis. G. Genoese and G. Mazzacuva.—p. 1081.
*Tuberculin Allergy and Whooping-Cough. P. Galli.—p. 1091.
Lymphocytic Meningeal Syndrome. S. Rapisardi.—p. 1099.
Hereditary Syphilis in Second Generation. A. Ronchi.—p. 1105.
Pituitary Dystrophy. F. D'Asaro.—p. 1115.

Tuberculin Allergy and Whooping Cough.—Galli emphasizes the danger of temporary suppression of specific allergy in tuberculous children during whooping-cough. Periodic examination is necessary as well as treatment to prevent generalization of the tuberculosis.

Policlinico, Rome

30: 1313-1344 (Oct. 8) 1923

Hemoconia in Infants. L. Spolverini and R. Gentile.—p. 1313.
*Acute Gummatous Meningitis. P. M. Polleri.—p. 1318.
Early Syphilitic Meningitis. B. Masci.—p. 1322.

Acute Gummatous Meningitis.—Polleri reports a case of acute meningitis in a man giving a history of syphilis. Complement fixation in blood and cerebrospinal fluid was negative, but the patient recovered after antisyphilitic treatment.

30: 1381-1414 (Oct. 22) 1923

Cystic Tumors of the Brain. L. Schiboni.—p. 1381.
Action of Bismuth in Syphilis. O. Sciarra.—p. 1389.
*Epidemiology and Treatment of Plague. A. Ilvento.—p. 1391.
Treatment of Progressive Paralysis. R. Monteleone.—p. 1392.

Epidemiology and Treatment of Plague.—Ilvento injects a 0.5 per cent. solution of iodin into the glands affected by bubonic plague (four injections of 0.5 c.c. daily). The injections cause edema around the glands. If the glands suppurate he injects a solution of iodin in alcohol or glycerin. All his seventeen patients recovered.

Riforma Medica, Naples

39: 961-984 (Oct. 8) 1923

*Action of Skin and Hair Extracts on Growth of Hair. L. Sivori and U. Rebaudi.—p. 961.
Anaerobes in Otology. P. Brisotto.—p. 963. Cont'n.
Intradermal Reaction in Amebic Dysentery. L. Scalas.—p. 967.
Alcohol-Free Products from Grapes. M. Gioseffi.—p. 971.

Action of Skin and Hair Extracts on Growth of Hair.—Sivori and Rebaudi rubbed digested skin and hair from guinea-pigs in an ointment into the skin and found an increase in hair growth. A less pronounced stimulating effect occurred if they fed the preparations. Subcutaneous injection caused inhibition of the hair growth.

39: 985-1008 (Oct. 15) 1923

*Intradermal Reaction in Echinococcus Disease. Giampaolo.—p. 985.
Malaria and Diabetes. F. Galdi.—p. 988.
*Provoked Anisocoria in Pulmonary Tuberculosis. Fanelli.—p. 991.
Apparatus for Artificial Pneumothorax. G. Breccia.—p. 993.
High Frequency Currents in Oral Surgery. B. de Vecchis.—p. 994.

Intradermal Reaction in Echinococcus Disease.—Giampaolo found that Casoni's intradermal reaction with the fluid from echinococcus cysts is positive in the majority of such patients. It is negative when the parasites are dead.

Provoked Anisocoria in Pulmonary Tuberculosis.—Fanelli used Sergent's test on twenty tuberculous patients and six controls with good results. The test consists in instillation of atropin in the eyes. The pupil dilates first on the side of the tuberculous lesion in the lungs if unilateral, or of the more progressive lesion if both sides are affected.

39: 1009-1032 (Oct. 22) 1923

Capillaroscopy in Normal Subjects. L. Manfredi.—p. 1009.
*Pulmonary Pseudo-Tuberculosis. G. B. Caputi.—p. 1012.
Sarcoma in Transplaced Testis. C. Romiti.—p. 1014.
Isodynamic Law from Clinical Standpoint. A. Ferrannini.—p. 1017.
Dementia with Aphasia. F. Vizioli.—p. 1018.

Pulmonary Pseudo-Tuberculosis.—Caputi reports the history of a patient with repeated hemoptysis and insignificant pulmonary findings. No tubercle bacilli were found in the sputum, which contained numerous spirochetes of the Castellani type. The patient recovered after administration of tartar emetic. She was a syphilitic woman, aged 43. Hemoptysis had been first noted two years before.

Tumori, Rome

10: 129-256 (Oct. 15) 1923

*Adsorption by Cancer Cells. J. Carra.—p. 129.
Tar Cancer. S. Dentici.—p. 139.
Congenital Liver Adenomas. F. Rossi.—p. 171.
Cystic Syringadenoma. L. Bussalai.—p. 195.
Malignant Myxomas. F. Vigi.—p. 203.
Fibroleiomyoma of Femoral Vein. C. Natali.—p. 224.

Adsorption by Cancer Cells.—Carra found in experiments in vitro that iodin and epinephrin are adsorbed by surviving cancer cells more strongly than by other tissues of the body.

Brazil-Medico, Rio de Janeiro

2: 153-172 (Sept. 8) 1923

*Toxic Amblyopia. G. de Andrade.—p. 153.
*Spastic Stenosis of the Esophagus. E. Vampré.—p. 158. Conc'n.

Toxic Amblyopia.—De Andrade discusses the group of toxic amblyopias with central scotoma and inability to distinguish colors. This is the tobacco and alcohol, arsenic, carbon bisulphid, iodoform and diabetes group. The visual disturbance develops insidiously, and persons in this category whose occupation requires distinguishing between red and green may make disastrous mistakes before their amblyopia is recognized. He reports some puzzling cases; one in a woman who had clandestinely taken up smoking in prophylaxis of influenza. Two other cases were in men who used neither tobacco nor alcohol, but one was bookkeeper in a dark, close room in a tobacco factory where the air was saturated with tobacco fumes, and the other worked with carbon bisulphid. Examination of this young man's working mates showed similar visual disturbances in three others. The proprietor of the factory installed better ventilation, and there have been no further cases. In all the cases in this category, abstention, with the indicated therapeutics, was followed by a complete cure. One patient was unwilling to change his habits, and the visual disturbances progressed to complete blindness.

Spastic Stenosis of Esophagus.—Reviewed on page 1825.

2: 239-248 (Oct. 20) 1923

*Schistosomiasis in Brazil. E. Cardoso.—p. 239.
Bacillary Dysentery at Rio. A. Lins.—p. 240.
Neo-Arsphenamin in Malaria. A. Brandão.—p. 243.

Schistosomiasis in Northern Brazil.—Eleyson Cardoso reports the findings of a commission from the Cruz Institute. Specimens of *Schistosoma mansoni* were found in stools from five different points investigated in the state of Sergipe, and the snail hosts were numerous. In all but 3 of the 449 positive cases in one place, there were associated parasites. The infestation caused no appreciable symptoms, and the number of ova rapidly declined under the influence of tartar emetic in the few cases in which it was used.

Gaceta Médica de Caracas

30: 289-304 (Oct. 15) 1923

*Peptone Therapy in Migraine. A. Herrera Vegas.—p. 290.
*Yeast Substitute for Insulin. P. González Rincones and E. Noguera Gómez.—p. 293.
Water Plant Chara in Prophylaxis of Malaria. J. R. Risquez.—p. 295.

Parenteral Peptone Therapy in Migraine.—Herrera Vegas reports a case which sustains the success of Miller and Raulston in treating migraine, as a sensitization disease, by intravenous injection of peptone (THE JOURNAL, June 30, 1923, p. 1894).

Substitute for Insulin.—González Rincones and Noguera Gómez prepared a substance with an insulin action from brewer's yeast. They describe the simple technic for obtaining the yeast filtrate, and show in a table the constant drop in the sugar content of the blood in twenty-five rabbits three hours after its intravenous injection. It has been tested to date in only one human subject, González Rincones volunteering for the purpose. He is the medical bacteriologist of the central office of the national public health service, and Noguera Gómez is the chemist.

Prensa Médica Argentina, Buenos Aires

10: 333-356 (Oct. 10) 1923

*Duodenal Ulcer. P. Alessandrini (Rome).—p. 333.
Bill to Centralize Public Health Work. M. Aberastury.—p. 337.
*The Gripper Amputation Stump. Ceballos.—p. 342.
Biopsy. S. Mazza and M. Balado.—p. 345. Cont'n.

Duodenal Ulcer.—Alessandrini declares that chronic gallbladder disease is the malady that most often simulates ulcer in the digestive tract. In his fifty-two cases of presumptive duodenal ulcer, in the last ten years, his first step was to exclude a gastric ulcer. A filling defect in the duodenum and the concave, instead of the normal convex outline of the lesser curvature of the superior portion of the duodenum are characteristic of duodenal ulcer, but Alessandrini says that only serial roentgenography is dependable, as spasmodic contraction may obscure the findings. Vomiting was exceptional with the hunger pain in his cases of duodenal ulcer, while the periods of pain were exceptionally regular, and generally corresponded to change in position. Some of his cases were exceptions to all rules, and only the duodenal tube settled the diagnosis. If the radiographic findings persist practically unmodified at different sittings, the diagnosis is almost certain. The coincidence of painful periods with the menses was observed more with gallbladder disease, but cholecystitis and ulcer were often associated.

Gripper Amputation of the Forearm.—Illustrations are given showing the strong grip that is possible when the forearm is cleft to form a fork. The two tines are 12 cm. long in the case described, the first in which this "digitation of the stump" was applied in Argentina.

Semana Médica, Buenos Aires

2: 657-728 (Oct. 4) 1923

Biology and Immunology of Tuberculosis. G. Aráoz Alfaro and L. Ymaz.—p. 657.
Adhesive Pericarditis in Children. A. Casaubón.—p. 661.
*Nasal Neuroses. E. Riccitelli and Y. Franchini.—p. 665.
Pharmacodynamic Action of Opium. M. Soto.—p. 671.
Basal Metabolism in Cases of Goiter. D. del Valle, Jr., and Dowling.—p. 710.
Osteomas of the Brain. R. Lozano Monzón.—p. 715.
Alveolar Echinococcosis in Kidney. Idem.—p. 716.
Plasmogenesis. A. L. Herrera.—p. 721.

Nasal Neuroses.—Riccitelli and Franchini declare that hay-fever, spastic vasomotor rhinitis, nasal hydrorrhea and other forms of nasal, laryngeal and bronchial neuroses are all different varieties of a single syndrome. Treatment addressed to the centrifugal element of the reflex responsible for the neurosis does not act on the cause. The pollen, protein or other extraneous cause bringing on the reflex sneezing, etc., is merely the casual stimulus for the vagotonic or other reflex. And the vagotonia is always due to some infection or intoxication. In the overwhelming majority of cases, latent tuberculosis or inherited syphilis is responsible. In their fifty cases treated on this basis, usually with minute doses of tuberculin or mercury or both, not only was the nasal neurosis cured in 80 per cent., but the general health improved notably.

2: 729-784 (Oct. 11) 1923

*The Electric Axis of the Heart. G. Bosco.—p. 729.
Sarcoma of the Mamma. G. Zorraquín.—p. 737.
Hemorrhage in the Cerebellum. R. Chiappori and G. Segura.—p. 741.
The Senile Arc. O. Wernicke.—p. 742.
*Eosinophilia with Hydatid Cyst. J. Bacigalupo.—p. 750.
Roentgenography of Gastric Ulcer. E. L. Lanari.—p. 752.
Government Circular on Cesarean Section, 1804. F. A. Coni Bazán.—p. 772.
The Paranoiac a Peril. G. Genil-Perrin.—p. 774.
Treatment of Painful Myoclonia in Parkinson's Disease. M. Gommés.—p. 776.
Military Hygiene. C. Trejo.—p. 777.
Light in Origin of Life. A. L. Herrera.—p. 780.

The Electric Axis of the Heart.—Bosco shows by his twenty-four electrocardiograms and roentgenograms that the changes in the electric axis of the heart are as important from the semeiologic standpoint as changes in the anatomic axis.

Eosinophilia After Skin Tests for Hydatid Cyst.—Bacigalupo relates that in cases of hydatid cyst, the sensitization entails eosinophilia after the specific intradermal or subcutaneous test injection of hydatid fluid.

2: 785-840 (Oct. 18) 1923

Inaugural Lecture on Clinical Medicine. R. A. Bullrich.—p. 785.
Correction of Congenital Syndactylia. R. Finochietto.—p. 790.

*Schick Test in Adults. F. Destéfano et al.—p. 792.
Chemical Tests for Barbital and Phenobarbital. J. A. Sánchez.—p. 794.
Tribute to Pasteur. H. Dasso.—p. 801.
Mineral Waters and Climatic Health Resorts. M. Lázaro Odriozola.—p. 807.
Slitting Uterine Cervix to Aid Delivery. S. E. Bermann.—p. 809.
Organization of the Profession. G. Bermann.—p. 825.
Protecting Suspensory in Gonorrhea. E. Escomel.—p. 829.

Schick Test in Adults.—The test was applied to 392 sixth year medical students at Buenos Aires, with a positive response in 39.03 per cent.

2: 841-912 (Oct. 25) 1923

*Heliotherapy of Laryngeal Tuberculosis. L. Samengo.—p. 841.
The Antisyphilis Bill. N. V. Greco.—p. 846.
Immune Biology of Tuberculosis. G. Aráoz Alfaro and L. Ymaz.—p. 855.
Endocrinology in Gynecology. R. Araya.—p. 863.
Operative Treatment of Bladder Fistula. J. Salleras.—p. 898.
Ovarian Cyst in Infant. J. Eseverri Gainza and A. Metraux.—p. 900.
Width of Aorta in Children. E. A. and J. J. Beretervide.—p. 901.
*Acute Suprarenal Insufficiency. O. A. Berisso and A. N. Godoy.—p. 904.

Heliotherapy of the Larynx.—Samengo's apparatus combines the mouth opener and tongue depressor with a tube and bulb which aspirates the saliva as it accumulates. The sunlight is reflected on the larynx from a nickel laryngoscope in the throat.

Acute Suprarenal Insufficiency.—The clinical picture presented by the young man suggested peritonitis from perforation, consecutive to an infectious sore throat. But the progress of the disease explained it as acute suprarenal insufficiency. The peritoneum was intact at necropsy.

Siglo Médico, Madrid

72: 909-932 (Sept. 22) 1923

Technic for Roentgenotherapy. B. Navarro Cánovas.—p. 909.
Suture After Extraction of Cataract. B. Carreras.—p. 911.
Chilling in "Toughening." A. Lapuente é Ibarra.—p. 912.
*Intratracheal Medication. T. Martin Carrasco.—p. 913. Conc'n p. 941.

Intratracheal Medication.—This is Martin Carrasco's graduation thesis, based on the literature and thirty-eight personal cases of pulmonary tuberculosis and numerous other cases of other affections treated systematically over long periods. A tendency to hemoptysis seems to be the only contraindication, he says, but laryngoscopy is indispensable unless the injection is made through a puncture of the trachea. Primary chronic bronchitis can always be completely cured, and acute bronchitis arrested. Antigangrene serum can be advantageously introduced by this route, as also antiserums for pneumonia. Asthma may be much benefited. He instils in asthma about 4 c.c. of physiologic saline solution containing a little procain and epinephrin.

72: 957-980 (Oct. 6) 1923

Test for Sugar in Urine. M. Maestre Ibáñez.—p. 957.
What Does the Bundle of His Transmit? G. R. Gonzalo.—p. 958.

72: 1029-1052 (Oct. 27) 1923

*Roentgenotherapy of Enlarged Tonsils. Piga et al.—p. 1029.
Welfare Work for Children in Spain. Martínez Vargas.—p. 1032.
Climatic Treatment of Tuberculosis in Spain. J. Avendaño and F. de Paz.—p. 1034.
Antigens and Antibodies. Castro Pascual.—p. 1035.

Roentgenotherapy of Enlarged Tonsils. — Piga and his co-workers report the complete retrogression of the enlarged tonsils in the three children treated. They followed Nogier's directions. The tonsils were of the soft type, and the children were 7 and 9 years old.

Deutsche medizinische Wochenschrift, Berlin

49: 1287-1320 (Oct. 12) 1923

*Cell Function and Immunity. H. Oeller.—p. 1287.
Skin and Immunity. C. Krauspe.—p. 1291.
*Lecithin in Serodiagnosis. H. Sachs and A. Klopstock.—p. 1292.
Reactivity of Mice in Tar Cancer. H. Sachs and N. Takenomata.—p. 1294.
Intratumoral Injections of Thorium X. L. Halberstaedter.—p. 1295.
Virulence of Streptococci. L. Radice.—p. 1296.
Hemorrhagic Diathesis. A. Gehrcke.—p. 1298.
"Cicatricial Sounds" in Cured Pulmonary Tuberculosis. K. Siegfried.—p. 1300.
*Keratomalacia in Children. R. Hamburger.—p. 1301.
Pathologic Import of Tender Points. Cornelius.—p. 1303.
Treatment of Vincent's Angina. H. Schwerin.—p. 1304.
Fights Against Ants. E. Klieneberger.—p. 1305.
English Conscientious Objectors. H. Böing.—p. 1306. Conc'n.
Physician and Public Instruction in Hygiene. W. Gorn.—p. 1307.
Physician and Life Insurance. Hanauer.—p. 1308.

Cell Function and Immunity.—Oeller injected chicken blood intravenously into guinea-pigs. He observed a phagocytosis limited almost exclusively to the endothelial cells of the spleen and liver. The maximum was obtained in about four hours. In the immunized guinea-pig, the corpuscles are hemolyzed in the blood stream and the nuclei are immediately taken up by the first cells which they pass, namely, the endothelial cells of the capillaries of the lungs. A strong leukocytosis sets in, and the lungs are crowded with leukocytes in five or ten minutes. If the immunized animal had been subjected to the action of the roentgen rays, the cells were unable to phagocyte.

Lecithin in Serodiagnosis.—Sachs and Klopstock found that the serum from about 50 per cent. of the tuberculous flocculated with a solution of calcium chlorid and an emulsion of lecithin. The reaction was also frequent in pregnancy.

Keratomalacia in Children.—Hamburger emphasizes the possibility of keratomalacia in breast-fed children whose mothers do not get enough fat or eggs in their food. Differentiation from gonococcal and other catarrhal lesions is difficult, and therefore cod liver oil should be given in every affection of the eyes of a child.

49: 1355-1380 (Oct. 26) 1923

Treatment of Diabetes. A. A. Hijmans van den Bergh and A. S. van Heukelom.—p. 1355.
Peptic Ulcers. M. Einhorn.—p. 1359.
*Physiologic Treatment of Poliomyelitis. K. Biesalski.—p. 1361.
*Treatment of General Paralysis. R. Weichbrodt.—p. 1364.
Spirochetes of Relapsing Fever in the Blood. P. Manteufel.—p. 1366.
Treatment of Trichophytosis. W. Engelhardt.—p. 1367.
The Meinicke and the Wassermann Reactions. R. Jänecke.—p. 1368.
Ileus with Gastric Hemorrhage. K. Franke.—p. 1368.
Turpentine Poisoning from External Use. Ridder.—p. 1369.
Technic for Antisepsis and Asepsis. Fesaler.—p. 1370.
Progress of Psychiatry. Bostroem.—p. 1372.
The Tuberculosis Law in Prussia. M. Neisser.—p. 1373.

Physiologic Treatment of Poliomyelitis.—Biesalski insists that poliomyelitis must not be allowed to entail contractures. They can be prevented by symmetrical bedding and splints.

Treatment of General Paralysis.—Weichbrodt finds that every patient with general paralysis should be treated with arsphenamin. If this treatment fails, inoculation with relapsing fever or malaria can be tried, although the results are not brilliant.

49: 1381-1406 (Nov. 2) 1923

Chronic Heart Insufficiency. E. Romberg.—p. 1381.
*"The Small Heart." E. Meyer.—p. 1384.
Psychiatry and Epidemic Encephalitis. K. Bonhoeffer.—p. 1385.
*Prevention of Measles. Rietschel.—p. 1386.
Abnormal Attitude of Head from Ocular Disturbances. A. Bielschowsky.—p. 1387.
Vital Staining of Blood. W. Weigeldt.—p. 1390.
Functional and Organic Affections of Stomach. J. Alsberg.—p. 1393.
*Intravenous Injections of Camphor. E. Schilling.—p. 1394.
The Medical Tribunal of Honor. G. H. Sieveking.—p. 1395.
Funds for Research. J. Schwalbe.—p. 1395.

"The Small Heart."—Meyer observed a transitory increase in the transverse diameter of small hearts after an infusion of physiologic salt solution (containing all the minerals of the plasma).

Prevention of Measles.—Rietschel recommends the preventive injection of 20-25 c.c. of blood from the mother or from any other relative who has had measles.

Intravenous Injections of Camphor.—Schilling injects camphor in oil, intravenously, in morphin and carbon monoxid poisoning. He found that this shortens the period of lack of consciousness. The action is also favorable in severe collapse.

Jahrbuch für Kinderheilkunde, Berlin

103: 113-176 (Oct.) 1923

*Alimentary Intoxication. H. Kleinschmidt.—p. 113.
Acute Nutritional Disturbances. A. Orgler.—p. 121.
*Pathogenesis and Treatment of Tetany. K. Scheer and A. Salomon.—p. 129.
Tuberculin in Treatment of Asthma. R. Cahn.—p. 143.
Acute Nutritional Disturbances. S. Rosenbaum.—p. 149.
Weight of the Thymus in Infants. A. S. Sokolow.—p. 157.

Alimentary Intoxication.—Kleinschmidt concludes from his observations that loss in water alone does not cause fever in

infants. An increased permeability of the intestinal wall for the proteins is also necessary. When habitual vomiting is treated with concentrated "albumin milk" it should be accompanied by giving water between the feedings, preferably by the mouth and in small amounts.

Pathogenesis and Treatment of Tetany.—Scheer and Salomon used Greenwald's method to determine the acid-soluble and the lipoid fraction of phosphorus compounds in the serum of infants. They found a lowering of the acid-soluble fraction in pneumonia and rickets. It is increased in spasmophilia, and especially in tetany. The lipoid fraction is a little increased in spasmophilia, but it was decreased in its most severe form ("phosphate tetany"). The ratio between the two figures is low in pneumonia and rickets and high in spasmophilia, especially in the severe type.

Klinische Wochenschrift, Berlin

2: 1869-1916 (Oct. 8) 1923

The Kidneys During Pregnancy. B. Zondek.—p. 1869.
The Sympathetic System. F. Brüning.—p. 1872.
*Cause of Sultriness. O. Kestner.—p. 1874.
Experimental Syphilis in Rabbit Cornea. E. Hoffmann and E. Zurhelle.—p. 1875.
*Biology of Skin. H. Vollmer.—p. 1878.
*Distillation of Bacteriophagic Agents. O. Olsen and Y. Yasaki.—p. 1879.
Autonomy of Capillaries. W. Parrisius.—p. 1881.
Occupational Poisoning in Wrecking Ships. R. Engelsmann.—p. 1884.
Dialysis of Blood in Living Subject. G. Haas.—p. 1888. Reply. H. Necheles.—p. 1888.
Solubility of Uric Acid and Its Salts. A. Jung.—p. 1889.
Obtaining Leukocytes from Living Animals. M. Kasahara.—p. 1889.
Paraffin Reaction with Cerebrospinal Fluid. V. Kafka.—p. 1890.
Hemiplegia from Illuminating Gas. M. Schneider.—p. 1890.
Case of Phenobarbital Poisoning. H. W. Nicolai.—p. 1891.
Tuberculosis of Mesenteric Glands. F. Lotsch.—p. 1892.
Home Nursing. F. Goldmann.—p. 1896.

Cause of Sultriness.—Reported in our Berlin Letter, Dec. 8, 1923, p. 1973.

Biology of Skin.—Vollmer studied the acidity of the urine after intracutaneous injections of various solutions. Distilled water and hypotonic and isotonic saline solutions lowered the acidity of the urine, while it was increased by a hypertonic salt solution. The action is apparent even if the blood supply of the extremity is entirely blocked by compression of the arteries. He considers it as a pneumogastric reflex, and therefore an atropin solution is inactive. Procain does not paralyze the parasympathetic, and hence does not inhibit the reflex. He believes that stimulation of the pneumogastric is associated with increased metabolism, alkalosis, increase in phosphates and potassium, and a decrease in calcium in the blood. Stimulation of the sympathetic is associated with the opposite symptoms.

Distillation of Bacteriophagic Agents.—Olsen and Yasaki succeeded in distilling bacteriophages in the vacuum at low temperature. The lytic agent is bound more firmly by bouillon than by simple salt solution. Precautions were taken to exclude, so far as possible, the possibility of transportation of the agent by droplets of fluid.

2: 2013-2060 (Oct. 29) 1923

Uremia. L. Lichtwitz.—p. 2013.
Blood Capillaries. W. Heubner.—p. 2015. Conc'n.
Action of Rays on Man. O. Kestner et al.—p. 2018.
*Action of North Sea Climate. C. Häberlin et al.—p. 2020.
*Tetany and Alkalosis. D. Adlersberg and O. Porges.—p. 2024.
Stasis in Lungs, and Collateral Circulation. K. Schläpfer.—p. 2026.
Livedo Racemosa. E. Urbach.—p. 2027.
Bilirubin in Urine. G. Sabatini.—p. 2031.
Late Roentgen-Ray Injuries. F. Heimann.—p. 2034.
Wire Extension of Shoulder. W. Block.—p. 2036.
Pharmacologic Skin Reactions. W. Heubner.—p. 2037.
"Seroreaction with Cancer." G. Izar.—p. 2038.
Sensitization to Rays with Eosin. R. Gassul.—p. 2038.
*Phosphates and Narcosis. K. Spiro.—p. 2039.
Decoloration of Nile Blue by Serum. H. Dold.—p. 2040.
Fever in Disease of the Thyroid. N. Schereschewsky.—p. 2041.
To Promote Breast Nursing. A. Seitz.—p. 2042.
The New Law Against Venereal Disease. W. Schultze.—p. 2046.

Action of North Sea Climate.—Häberlin, Kestner, Lehmann, Wilbrand and Georges publish their observations on children sent to the seashore. They found almost unbelievable changes in the appearance and reactivity of the children after two months of the changed climate. The influence of the environment must not be underestimated. It is difficult to decide to what extent the inherited constitution is responsible for the condition of a subject, and what is due simply to the surroundings.

Tetany and Alkalosis.—Adlersberg and Porges confirm the fact that injections of phosphates increase tetany. They explain the favorable action of acid ammonium phosphate as due to the fact that the acid ion has an inhibiting action on tetany. This action predominates when the substance is taken by the mouth.

Phosphates and Narcosis.—Spiro reports inhibition of magnesium anesthesia by phosphates. Heusser found an increase in the magnesium: calcium ratio in the blood in chloroform anesthesia. He also confirmed the beneficial action of phosphates on the after-effects of chloroform, as found by Staub. Spiro emphasizes the importance of the reciprocal proportions of the ions as well as their absolute concentration in the blood. Many divergences in the literature are caused by overlooking this fact.

2: 2061-2108 (Nov. 5) 1923

Metabolism and Surgery of Goiter. A. Hellwig.—p. 2061.
*Essential Hypertension. E. Kylin.—p. 2064.
Therapeutic Irradiation and Inhalation. H. Picard.—p. 2066.
*Serodiagnosis of Syphilis. H. Adler and F. Sinek.—p. 2071.
The Mastic Reaction. K. Eskuchen.—p. 2072.
Heart Rhythms in Infection. H. Deist.—p. 2074.
Vitamins and Weight at Birth. D. H. Katz and W. König.—p. 2077.
Electrocardiography. A. Biedl and J. Rihl.—p. 2079.
Biologic Tests with Spinal Fluid. P. Ellinger.—p. 2082.
Protein Quotient of Serum. S. M. Neuschlosz and R. A. Trelles.—p. 2083.
Traumatic Meningitis. E. Mertens.—p. 2084.
Surgery of Tuberculous Kidney. H. Kümmell.—p. 2085.
Survey on Insulin. H. Staub.—p. 2089.

Essential Hypertension.—Kylin considers great instability of the blood pressure a more characteristic sign of essential hypertension than the height of the arterial pressure. Most of these patients have an abnormally low tolerance for sugar. The injection of epinephrin does not increase markedly the hyperglycemia nor the blood pressure. He points to analogies with bronchial asthma, and declares his belief that stimuli, which would provoke only a slight reaction in normal subjects, cause a spasm of the unstriated muscles in them. The whole affection seems to be only a symptom of a disease of the vegetative nervous system. The diabetes occurring with it probably also depends on a disturbance of the nervous regulation and might be different from the pancreatic form.

Serodiagnosis of Syphilis.—Adler and Sinek used a colloidal suspension of mastic, lecithin and cholesterol as antigen. Normal serums clear it, while syphilitic serum causes a precipitate. If mastic alone is used, all the serums cause precipitation.

Medizinische Klinik, Berlin

19: 1417-1450 (Oct. 28) 1923

Vegetative Centers in Internal Medicine. K. Dresel.—p. 1417.
Serodiagnosis of Syphilis. G. Scherber.—p. 1419. Conc'n.
*Cancer in Gastric Ulcer. H. Finsterer.—p. 1425.
*Encephalography in Infants. A. Mader.—p. 1427.
Intestinal Lymphogranulomatosis. K. Terplan and E. Wallesch.—p. 1428.
Paralysis of Inferior Laryngeal Nerve. F. Hutter.—p. 1430.
Improved Technic for Injections. Jaffé.—p. 1431.
Waste in Treatment of the Insured. T. Engel.—p. 1432.
Practical Gynecology. E. Runge.—p. 1435. Cont'n.
Recent Progress in Chronic Arthritis. A. Muncke.—p. 1438.

Cancer in Gastric Ulcer.—Finsterer admits the extreme rarity of malignant degeneration of ulcers of the duodenum. He saw none among his 380 operated patients. It is very different, however, with gastric ulcers. He finds here the development of a carcinoma in a large percentage of his patients (20 ulcer-cancers among 81 gastric cancers). The prognosis of these tumors is bad. Metastasis occurs even when the cancer had been discovered only in the histologic examination of the resected ulcer. He considers, therefore, resection of chronic gastric ulcers as indicated to prevent carcinoma.

Encephalography in Infants.—Mader tried pneumoencephalography on twenty infants. He succeeded in keeping the majority alive by artificial respiration, inhalation of oxygen and massage of the heart. One of the infants died.

19: 1451-1478 (Nov. 4) 1923

*Treatment of Heart Disease. N. Jagic.—p. 1451.
Multiple Sclerosis Versus Myelitis. W. Goebel and K. Peter.—p. 1454.
Mechanism of Death from Tuberculosis. A. Kirch.—p. 1458.
New Sources of Therapeutic Light. A. Laqueur and H. Rohn.—p. 1460.
Rupture of Kidney. G. Neugebauer.—p. 1463.
Bilateral Influenzal Orchitis. E. Mendel.—p. 1464.
Tubercle Bacilli in Cerebrospinal Fluid. F. Schleissner.—p. 1464.
Death After Operation for Traumatic Hernia. H. Engel.—p. 1465.
Survey on Pediatrics. Rietschel.—p. 1468.
Survey on Ophthalmology. Adam.—p. 1470.
*Irregular Practitioners and Transmission of Syphilis. F. Pinkus.—p. 1475. Begun p. 1448.

Treatment of Heart Disease.—Jagic differentiates the neuralgic pains from a diseased aorta (aortalgia) from true angina pectoris. Antineuralgics lessen the pain in aortalgia, papaverin and amyl nitrite in angina pectoris. Antisyphilitic treatment has frequently a good action in aortalgia, especially in beginning cases.

Irregular Practitioners and Transmission of Syphilis.—Pinkus illustrates the dangers of insufficient treatment of syphilis by irregular practitioners. He had occasion to examine exact histories of 2,500 prostitutes and 1,500 insurance cases observed during a period of fifteen years. Among 565 untreated cases, 23.7 per cent. had tabes; among 632 treated with only one course, tabes was present in 8.4 per cent.; among 402 better treated, in 3.2 per cent.; among 46 treated exclusively with arsphenamin, 2.2 per cent. Among 245 cases of more than ten years' standing, who had been treated only with "natural remedies," 78 had tabes, 53 syphilis of the brain, and 83 tertiary lesions. Only 3 were clinically and serologically free from syphilis so far.

Mitteil. a. d. Grenzgeb. d. Med. und Chir., Jena

36: 441-576, 1923

Chemotaxis in Local Infection. D. Schuster.—p. 441.
Auscultation of the Abdomen. C. Roesebeck.—p. 459.
Postoperative Complications. F. Schoening.—p. 466.
*Eyelid Reflex with Brain Lesion. H. A. Grueter.—p. 481.
Neurologic and Surgical Bases for Neurosurgery. S. Auerbach.—p. 497.
*Factors Modifying Test Diuresis. E. Marr.—p. 512.
*Oxygen Test of the Thyroid. Y. Hara.—p. 537.
Iodin and the Respiratory Gas Interchanges. Idem.—p. 558.
Research on Suprarenal Function. K. Laqua.—p. 566.

Eyelid Reflex with Brain Lesions.—Grueter found the response to the Kisch test (caloric or tactile irritation deep in the auditory canal) normal in 148 persons with normal ears and nervous system. In two patients with old trauma of the skull, the reflex was lacking. The findings in forty other persons show that a normal response does not exclude a brain lesion, but the negative reflex testifies certainly to injury of the brain.

Extrarenal Factors Modifying the Water Freshet Test.—Marr found the test diuresis defective in four of six cases of gastric ulcer and in two of five cases of gastric cancer. The test is therefore not conclusive under these conditions. Much less can it be used to differentiate ulcer from cancer, as some have suggested.

Oxygen Test of Thyroid Tissue.—Hara applied Asher's experiment (sensitiveness of rats to lack of oxygen) in thirty-three cases of goiter. His findings confirm that by this means the presence of the element in the thyroid secretion which acts on the metabolism of gases can be determined both qualitatively and quantitatively. His second communication deals with the mode of action of iodin on gas metabolism.

37: 1-144, 1923

*Diffuse Melanosis of the Skin. H. Friedrich.—p. 1.
*Problems of Postoperative Tetany. E. Melchior and M. Nothmann.—p. 9.
*Typhoid Bacilli Carriers. Hage and Brinkmann.—p. 25.
Pathologic Physiology of Swallowing. C. Dessecker.—p. 41.
Angiomas of Parotid Region. P. Schenk.—p. 51.
Familial Elephantiasis of the Legs. G. Brandt.—p. 56.
Treatment of Gangrene and Abscess in Lungs. Meyer-Börnecke.—p. 65.
Etiology of Secondary Hydronephrosis. R. Demel.—p. 73.
*Relations Between Blood and Gastric Juice. H. Kohler.—p. 87.
Roentgen-Ray Diagnosis of Atony of the Esophagus. J. Palugyay.—p. 107.
Progressive Dystrophy of Muscle. W. Schaefer.—p. 128.
Hydrocele of the Kidney. K. Rennen.—p. 139.

Diffuse Melanosis.—Friedrich urges special study of the blood pressure with melanosarcomas, suprarenal tumors, and lead poisoning. Hypertension may be found in these conditions with intact cardiovascular system.

Postoperative Tetany.—Melchior and Nothmann found exaggerated electric excitability in 30 per cent. of 74 persons after operations all below the thorax; in several, Chvostek's phenomenon could be elicited. A similar postoperative latent tetany was evident in 85 per cent. of 21 operative goiter cases. They warn therefore not to incriminate the parathyroid unjustly when tetany develops.

Typhoid Bacilli Carriers.—Hage and Brinkmann estimate at 3-5 per cent. the proportion of typhoid patients left permanent carriers. They have collected forty-eight cases in which the carrierhood was cured by operative measures, and fourteen cases in which they failed. To this proportion of 77.44 per cent. successes, two more successful cases are added and described in detail. One of the women was responsible for five cases of typhoid in two years—the only cases in the town.

Reciprocal Relations Between the Blood Serum and the Gastric Juice.—Kohler asserts that his research on thirty-eight patients with gastric ulcer and fifty-one free from ulcer has confirmed the loss of the normal ratio between the digestive potency of the gastric juice and the digestion-inhibiting potency of the antipepsin of the stomach wall. The ulcer is only the possible consequence of the upset in this reciprocal relation. The loss of the normal ratio can be detected by the digestion of a flake of (commercial) blood fibrin, impregnated with a green stain, in varying dilutions of gastric juice and blood serum, taken simultaneously after a test meal. The digestion and release of the stain from hour to hour provide a reliable objective index of the reciprocal relations between the gastric juice (pepsin), and the serum (antipepsin), and thus reveal the candidates for ulcer. The test requires the presence of free hydrochloric acid and the absence of blood, to be reliable, but the response proved exact in 98 per cent. of the ulcer cases and 97 per cent. of the others.

Monatsschrift für Geb. und Gynäkologie, Berlin

63: 185-308 (July) 1923

Stretching of the Abdominal Wall in Pregnancy. H. Sellheim.—p. 185.
*Life Expectancy with Hydramnion. E. Poeck.—p. 203.
Deliveries After Vaginifixation. O. Plümecke.—p. 219.
*Treatment of Uterine Myomas. D. v. Ott.—p. 225.
Early Puberty and Pregnancy. E. Wehefritz.—p. 237.
Unique Pregnancy Toxicosis. H. Heidler.—p. 249.

Life Expectancy with Hydramnion.—Poeck refers to Krahula's recent report on 72 hydramnion cases at Bonn and 219 collected from the records. Only 3.78 per cent. of the children survived, and only 1.03 per cent. of the total number were normal. Poeck ascribes the 40.1 per cent. surviving of his 136 hydramnion children to the early recognition of the anomaly, and suitable measures during delivery.

Myomectomies.—Ott remarks that he had witnessed in his forty years of practice the mortality of operations for uterine myoma drop from 13 per cent. to zero (1922) by the abdominal route, and from 2.6 to zero by the vaginal route, in 691 and 1,280 cases, respectively. Palliative measures, especially castration by knife or rays, he denounces as not only futile but directly injurious from the loss of the ovarian secretion. Either conservative myomectomy or panhysterectomy is the preferable treatment. By the vaginal route it averts all further complications.

64: 1-124 (Sept.) 1923

Hydraulic Pressure During Childbirth. H. Sellheim.—p. 1.
*The Placenta and the Uterus Motor Function. T. Franz.—p. 7.
Trichomonas Vaginitis. W. Liss.—p. 31. Idem. O. Gragert.—p. 37.
Recurring Acne at Pregnancy. G. H. Schneider.—p. 42.
Tubo-Ovarian Cysts and Salpingitis Isthmica Nodosa. L. Lederer.—p. 45.
Insufflation Test for Patency of Tubes. H. Guthmann.—p. 55.
Origin of Congenital Brittleness of Bones. A. Greil.—p. 59.
The Vagitus Question and the Asphyxia Question. R. Dyroff.—p. 75.
Disinfection of Deep Tissues in Treatment and Before Operation in Septic Gynecologic Affections. Frigyesi and Lang.—p. 85.
Impressions of Meeting of American Gynecologists. O. Frankl.—p. 93.

The Placenta and the Motor Function of the Uterus.—Franz states that his research has confirmed the action of the placental lipoids on the development and motor functioning of the uterus. He suggests that these lipoids, in cooperation with inorganic ions, may give the impulse for the motor functioning of the uterus to interrupt the pregnaney.

Münchener medizinische Wochenschrift, Munich

70: 1311-1332 (Oct. 26) 1923

The Superficial Dose in Roentgen Work. G. Holzknecht.—p. 1311.
*Action of Epileptic Serum on Arteries. O. B. Meyer.—p. 1312.
Insulin Treatment. F. M. Groedel and G. Hubert.—p. 1314.
Acute Pernicious Anemia in the Young. H. K. v. Winterfeld.—p. 1315.
*The Carotid Compression Experiment. E. Koch.—p. 1316.
Medicinal Soaps. H. Kionka.—p. 1318.
Prolapse of Umbilical Cord. G. Halter.—p. 1320.
*Schridde's Cancer Hairs. H. Friedrich.—p. 1321.
Diabetes in Infant. N. Johannsen.—p. 1323.
Digitalis Treatment. Grassmann.—p. 1324.

Action of Epileptic Serum on Arteries.—Meyer found that surviving strips from arteries do not contract in serum from epileptics. They present rhythmic contractions in normal serum.

The Carotid Compression Experiment.—Koch gives as the best point for compression of the carotid artery the level of the upper margin of the thyroid cartilage. This corresponds to the bifurcation of the carotid. Atherosclerosis is an important factor in the genesis of the reflex.

Schridde's Cancer Hairs.—Friedrich found in about 70 per cent. of patients suffering from cancer the changes in the hairs described by Schridde. In the temporal region and beard of such patients there are single, thick, lusterless black hairs. However, in examining other subjects, he found the same changes frequently, especially in cachexia.

Wiener Archiv für innere Medizin, Vienna

6: 495-609 (Oct. 1) 1923

*Extrarenal Factors in Diuresis. Weltmann and Schipper.—p. 495.
*Measurement of Diastolic Pressure. H. Sahli.—p. 515.
Rupture of Interventricular Septum. F. Brunn.—p. 533.
*Clinical Ergography. A. Lehndorff.—p. 545.
Urobilin in Body Fluids. O. Weltmann and W. Löwenstein.—p. 587.
"Heart After Muscular Exertion." E. Kauf.—p. 609.

Extrarenal Factors in Diuresis.—Weltmann and Schipper compare the elimination of a stain (fluorescein sodium) after intravenous and after subcutaneous injection. They found differences due to slow resorption from the affected tissues.

Measurement of Diastolic Pressure.—Sahli maintains that the miminal (diastolic) blood pressure is much lower than usually measured. This is due to the use of the wrong sort of apparatus. The correct normal average is 40.

Clinical Ergography.—Lehndorff publishes ergograms from healthy subjects and from different patients with nervous and endocrine disturbances. The method may reveal a latent paresis, as for instance in a case of migraine.

7: 3-206 (Oct. 20) 1923

Colloidal Gold and Mastic Reaction. E. Adler.—p. 3.
*Action of Tuberculin. II. H. Adler.—p. 27.
Melanotic Pigments. O. Adler.—p. 47.
Treatment of Chronic Malaria. F. Bardachzi.—p. 51.
Vital Staining of Erythrocytes. H. Engel.—p. 55.
Paratyphoid. M. Gutmann.—p. 83.
*Indications for Splenectomy. P. Kaznelson.—p. 87.
Lymphogranulomatosis of the Stomach. P. Kaznelson.—p. 117.
*Monocyte Reaction. F. Kohn.—p. 123.
Abnormal Sugar Metabolism. St. Lorant and Z. Adler.—p. 137.
Interference Phenomena in Heart. R. Scharf and E. Weiser.—p. 177.
Infection with Proteus. E. Weiser and H. Adler.—p. 193.
Formation of Urobilinogen. M. Winternitz.—p. 201.

Action of Tuberculin.—Adler used old tuberculin as the antigen in testing the serum of guinea-pigs. He found complement fixing antibodies in the serum of tuberculous animals after injections of this tuberculin. He considers it, therefore, a specific antigen. He discusses another possible explanation: the generally increased sensitiveness of tuberculous guinea-pigs. He found in fact in the infected animals—although not constantly—higher specific immune titers after injections of milk or proteus bacilli. The tuberculin titer was not increased, but general and local reactions were produced.

Indications for Splenectomy.—Kaznelson had good results with splenectomy in patients with chronic thrombopenic purpura. The spleen seems to attract and destroy the platelets. No results were obtained in other cases, among them one case of hemolytic jaundice. The assumption of stimulation of the bone marrow by the splenectomy was superfluous in his cases.

Monocyte Reaction.—Kohn reports the history of a syphilitic who during treatment had slight meningeal symptoms, fever and albuminuria. His blood was remarkable: Among 4,200 white cells were 74 per cent. of monocytes; 23 per cent. lymphocytes, and only 2.6 per cent. neutrophils (including 0.7 per cent. myelocytes). The patient recovered, and reacted later to milk injections with an increase in the neutrophils.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 1497-1592 (Oct. 13) 1923

*Influence of Insulin on Kidneys. S. van Creveld and van Dam.—p. 1498.
The Cleaning of Dirty Alcohol. M. van Riemsdijk.—p. 1511.
*Test for Albuminuria. J. T. Groll.—p. 1515.
Case of Pneumopericardium. P. S. Zecha.—p. 1517.
Chronic Staphylococcus Sepsis. L. Vos.—p. 1518.
Impressions of Johns Hopkins Hospital. C. van Dam.—p. 1537.

Influence of Insulin on the Behavior of the Kidneys in Respect to Glucose.—Crefeld and van Dam have repeated with modern technic de Meyer's experiments with surviving kidneys (frogs) perfused with a solution of glucose. The sugar content of the (artificial) urine became lower when insulin or pancreas extract was added to the perfusing fluid, or was injected beforehand. The phenomena observed seem to indicate, they say, that the internal secretion of the pancreas has some special action on the kidneys. This may be by its modifying the permeability of the glomerular membrane for glucose, or by modifying the resorption of glucose by the tubuli. It is possible that the combination of pancreas extract with glucose and a renal enzyme may lead to formation of a reactive glucose, analogous to what Winter and Smith observed in the liver.

Test for Albuminuria.—Groll recalls that every albumin has an optimal hydrogen ion concentration with which it coagulates most perfectly when treated. Bang seeks to insure this by using an acetate buffer solution; Groll has simplified the technic while increasing the precision. He uses a solution of 47.1 c.c. of glacial acetic acid and 140.7 gm. of sodium acetate to the liter. This solution keeps perfectly. To 3 c.c. of the filtered urine add an equal amount of this solution, and boil for half a minute (or longer). A fine precipitate is thrown down in the presence of albumin. The albumin can be filtered and washed.

Ugeskrift for Læger, Copenhagen

85: 741-756 (Oct. 18) 1923

*Improved Counting Chamber for Erythrocytes. O. Christensen.—p. 741.
*Anaphylactic Shock from Eating Shellfish. S. L. Henrichsen.—p. 743.

Technic for Counting the Erythrocytes.—This communication from Bang's service extols the advantages of mixing a suspension of a known number of yeast cells with the blood, to facilitate counting the red blood cells. An illustration of the improvised counting chamber advocated is given; this method is exceptionally rapid, simple and exact.

Anaphylactic Shock After Eating Shellfish.—In the two cases described, the intensely severe anaphylactic shock was relieved at once by a subcutaneous injection of epinephrin. In two minutes the distressing asthma had yielded to normal respiration, and the exanthem blanched out in twenty minutes. The intense pruritus in one of the two men subsided in an hour. Henriehsen cites three other Danish cases of this eruptive form of anaphylactic shock.

85: 757-770 (Oct. 25) 1923

Historical Case of Addison's Disease? H. Heckscher.—p. 757.
The Copenhagen Radium Emanatorium. H. Jansen.—p. 759.
Protection Against Abuse of Sickness Insurance. J. Kuhn.—p. 762.

85: 771-786 (Nov. 1) 1923

Physical Findings in School Children. P. C. J. Dalmark.—p. 771.
*Free Treatment of Venereal Disease. Ehlers.—p. 774.

History of Free Treatment of Venereal Disease.—Ehlers reviews the century and a half of free treatment of venereal disease in Denmark. According to the original decree in 1790, enforcing the principle of free treatment by the district health officer, the latter was paid by the state. Those who failed to apply for treatment were to be imprisoned on bread and water, or punished otherwise, after they were cured. Ehlers describes the measures in vogue 400 years ago. J. C. Tode, who died in 1805, seems to have been the first to distinguish gonorrhea from syphilis.